

2014 Proceedings
Midwest Deer & Wild Turkey Study Group Meeting
September 9th-12th, 2014
Potosi, Missouri

38th Annual
Midwest Deer
& Wild Turkey Meeting
2014



POTOSI, MISSOURI

Submitted by:

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Missouri Dept. of Conservation
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Agencies

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Background

The Midwest Deer and Wild Turkey Study Group (MDWTSG) meeting is an annual gathering of wildlife managers sanctioned by and affiliated with the Midwest Association of Fish and Wildlife Agencies. Primary objectives of the meeting include dissemination of deer and wild turkey management strategies, discussion of emerging or existing issues associated with deer and wild turkey management, and coordination of regional deer and wild turkey management or research efforts. The meeting location rotates among the Midwestern states that are active within the group.

Forums such as the MDWTSG meeting provide valuable opportunities for state deer and turkey biologists to become acquainted with emerging issues and exchange information and ideas related to deer and turkey research and management. The need for state fish and wildlife agencies to establish and maintain deer and turkey biologist positions and support travel of these biologists to the annual MDWTSG meeting is imperative for exchanging information to promote quality wildlife management and research in each state. It is more important than ever that state agencies are at the forefront of issues related to deer and turkey management in order to protect the heritage and recreational opportunities of hunting for future sportsmen and sportswomen.

Meeting Time and Place

The Missouri Department of Conservation (MDC) hosted the 2014 MDWTSG meeting at the YMCA Trout Lodge in Potosi, Missouri on September 9-12. The MDWTSG appreciates the financial support provided by the National Wild Turkey Federation (NWTF) and the Quality Deer Management Association (QDMA) to partially fund this meeting. Additional sponsors included Cabela's (lanyards, door prizes) and Whitetails Unlimited (door prizes). Additionally, the NWTF donated beverages for socials.

Attendance

Fifty-three participants attended the 2014 meeting, including state deer and turkey biologists from 13 Midwest member states (Indiana, Iowa, Illinois, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin) and attendees from other organizations including the NWTF, the QDMA, Michigan State University, University of Missouri, and the Ball State University. A complete list of attendees and contact information for deer and turkey state biologists are available in Table 1.

Executive Summary

Attendees at the 2014 MDWTSG meeting were welcomed by John Vogel, MDC Wildlife Regional Supervisor. Following the meeting introduction, there were five presentations that occurred during the joint session, including the following topics:

- Reframing the lead (Pb) discussion
- Biological and sociopolitical impacts of CWD in Missouri
- Statistical population reconstruction (SPR) as a tool to model deer and turkey populations
- Using SPR to estimate wild turkey population demographics

- Assessment of the factors that drive Midwestern turkey populations

Following the joint session, a number of presentations were given during both the deer and wild turkey break-out sessions. These topics included:

- Suggestions for applying SPR in assessments of deer population dynamics
- ABM for CWD: An adaptive disease management strategy
- Assessment of deer-vehicle collision occurrence in the Midwest
- Survival and cause-specific mortality of white-tailed deer fawns
- Community deer management in Town & Country Missouri
- NWTF - Save the Habitat. Save the Hunt update in Missouri
- National Wild Turkey Symposium update
- Sensitivity of maximum-sustainable-harvest rates for wild turkeys

In addition to the presentations, the deer break-out groups discussed a number of topics including:

- Population monitoring in the Midwest
- Private land deer management
- Public engagement in deer management
- Whitetail Summit and NDA

During a portion of the wild turkey break-out session, meeting attendees participated in a Midwest Wild Turkey Consortium Workshop. The Workshop provided attendees with an update about the Midwestern cooperative wild turkey research project and fostered discussion of project future direction. State status reports were presented in both the deer and wild turkey break-out sessions.

Business Meeting

The Business Meeting was conducted as a joint session involving both deer and wild turkey program leaders. The group discussed compilation of the 2014 MDWTSG proceedings, which will be available on the Group's website along with meeting notes and information about upcoming meetings. The website has been a useful tool for MDWTSG members, however, the Group discussed the need for a webmaster to guide website future direction. The 2015 MDWTSG meeting will be hosted by the Wisconsin Department of Natural Resources.

Bill Jensen (North Dakota Game and Fish Department) provided the Group with information about neonicotinoids and made mention of a webinar on the subject presented by the U.S. Fish and Wildlife Service. The Group discussed some of the concerns regarding the potential impacts of neonicotinoids on wildlife due to the widespread use of the pesticide. Currently, only limited research exists on the potential impacts to game birds and small mammals. The North Dakota Game and Fish Department is testing deer liver samples for the pesticide, and research is being initiated in South Dakota to assess the effects of the pesticide on pheasants and deer.

The Group discussed the next Midwestern Association of Fish and Wildlife Agencies meeting, which will occur in Duluth, Minnesota in June 2015. Minnesota member(s) of the MDWTSG should plan on attending to provide a report for the MDWTSG.

Table 1. List of Participants

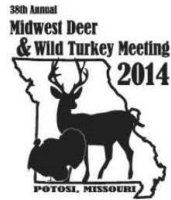
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Table 2. Previous Midwest Deer & Wild Turkey Study Group Meeting Locations

Year	State	Location	Date
1977	Missouri	Fountain Grove Wildlife Area	January 17-19
1978	Wisconsin	Wyalusing State Park	January 16-17
1979	Iowa	Rathburn Fish Hatchery	January 15-18
1980	Minnesota	Whitewater State Park	January 21-24
1981	Indiana	Harrison-Crawford State Park	January 19-22
1982	Ohio	Lake Hope State Park	January 18-21
1983	Nebraska	Louisville 4-H Camp	January 17-21
1984	Kansas	Camp Aldrich	January 16-19
1985	South Dakota	Black Hills	May 7-10
1986	North Dakota	Camp-of-the-Cross	January 20-23
1987	Michigan	Kellogg Biological Station	January 27-29
1988	Illinois	Touch of Nature	February 1-4
1989	Missouri	YMCA Camp of the Ozarks	January 23-26
1990	Wisconsin	Bethel Horizons Prairie Center	January 15-18
1991	Iowa	Conservation Education Center	January 14-17
1992	Minnesota	Whitewater State Park	January 13-16
1993	Indiana	Harrison-Crawford State Park	January 11-14
1994	Ohio	Canter's Cave 4-H Park	January 30 - Feb 2
1995	Nebraska	Mahoney State Park	January 15-18
1996	Kansas	Camp Pecusa	January 14-16
1997	South Dakota	Camp NeSoDak	August 24-27
1998	North Dakota	Camp Grafton	August 9-12
1999	Ontario	Blue Springs Scout Reserve	August 15-18
2000	Michigan	Thunder Bay Resort	August 20-23
2001	Illinois	Dixon Springs Ag. Station	August 19-22
2002	Missouri	Conception Abbey	August 18-21
2003	Wisconsin	Bethel Horizons Prairie Center	August 24-27
2004	Iowa	Conservation Education Center	August 22-25
2005	Minnesota	Eagle Bluff Envir. Learning Center	August 21-24
2006	Indiana	Camp Ransburg, BSA	August 20-23
2007	Ohio	Canter's Cave 4-H Park	August 19-22
2008	Nebraska	Fort Robinson State Park	September 14-17
2009	Kansas	Rock Springs 4-H Camp	September 14-17
2010	North Dakota	Camp Grafton	August 22-25
2011	Michigan	Ralph A. MacMullen Center	September 25-28
2012	South Dakota	Custer State Park	October 16-19
2013	Illinois	Allerton Park	August 18-21
2014	Missouri	YMCA Camp of the Ozarks	September 9-12

2014 Midwest Deer & Wild Turkey Study Group Meeting Agenda

38th Annual Midwest Deer & Wild Turkey Study Group Meeting

Potosi, Missouri
September 9th – 12th, 2014

**Agenda****Tuesday, September 9th**

5:00 – 8:00	Registration	Mallard Room 3 & 4
5:00	Evening Social	Mallard Room 3 & 4

Wednesday, September 10th

7:00 – 8:30	Breakfast	Dining Room
7:00 – 8:30	Registration	Mallard Rooms 3 & 4
8:30 – 12:00	Joint Meeting	Mallard Rooms 3 & 4
8:30 – 8:45	Welcome – John Vogel, Missouri Dept. of Conservation	
8:45 – 9:30	Reframing the Pb Discussion: Understanding the Complexity of the Decision Landscape – John Schulz, University of Missouri	
9:30 – 10:00	Biological and Sociopolitical impacts of CWD in Missouri – Jason Sumners, Missouri Dept. of Conservation	
10:00 – 10:15	Break	
10:15 – 11:00	Statistical Population Reconstruction as a Tool to Model Deer and Turkey Populations – Dr. Joshua Millspaugh, University of Missouri	
11:00 – 11:30	Using Statistical Population Reconstruction to Estimate Demographics in Wild Turkey Populations – Jason Isabelle, Missouri Dept. of Conservation	
11:30 – 12:00	Midwest Wild Turkey Consortium: A Collective Assessment of the Factors that Drive Midwestern Turkey Populations – Dr. Chad Parent, Michigan State University	
12:00 – 1:00	Lunch	Dining Room
1:00 – 3:00	Breakout Groups	
	Deer Breakout	Mallard Rooms 1 & 2
1:00 – 1:20	Suggestions for Applying Statistical Population Reconstruction in Assessments of Deer Population Dynamics – Dr. Joshua Millspaugh, University of Missouri	
1:20 – 1:40	ABM for CWD: An adaptive disease management strategy - Aniruddha Belsare, University of Missouri	
1:40 – 2:00	Assessment of Deer-Vehicle Collision Occurrence Across Agriculture, Northern Forest, and Forest-Agriculture Matrix Environments of the Midwest United States – Dr. Brent Rudolph, Michigan Department of Natural Resources	
2:00 – 2:20	Break	
2:20 – 2:40	Survival and Cause-Specific Mortality of White-tailed Deer (<i>Odocoileus virginianus</i>) Fawns in Suburban, Exurban, and Rural Areas – Chad R. Williamson, Ball State University	
2:40 – 3:00	Community deer management in Town & Country, MO: Sharpshooting and sterilization methods to reduce suburban deer density – Erin Shank, Missouri Department of Conservation	
	Turkey Breakout	Mallard Rooms 3 & 4
1:00 – 1:20	Save the Habitat. Save the Hunt Missouri Update – John Burk, NWTf	

1:20 – 1:40	11th National Wild Turkey Symposium and NWTF Technical Committee Updates – Tom Hughes, NWTF	
1:40 – 2:00	Sensitivity of Maximum-Sustainable-Harvest Rates for Wild Turkeys – Bryan Stevens, Michigan State University	
2:00 – 3:00	State Reports	
3:00 – 5:00	Activities Distributed Throughout YMCA Property	
6:00 – 7:00	Dinner	Dining Room
7:00	Evening Social	Mallard Rooms 1 & 2

Thursday, September 11th

7:00 – 8:00	Breakfast	Dining Room
8:00 – 12:00	Breakout Groups	
	Deer Breakout	Mallard Rooms 1 & 2
	Round Table Discussion: Population monitoring, private land deer management, format of MAFWA Directors report (Tonkovich), public engagement (Shelton), Whitetail Summit & NDA (Rudolph), SEDSG (Flinn)	
	Turkey Breakout	Mallard Rooms 3 & 4
	Midwest Wild Turkey Consortium Workshop	
12:00 – 1:00	Lunch	Dining Room
1:00 – 3:00	Breakout Groups	
	Deer Breakout	Mallard Rooms 1 & 2
	State Reports	
	Turkey Breakout	Mallard Rooms 3 & 4
	State Reports	
3:00 – 3:15	Break	
3:15 – 5:00	Joint Business Meeting	Mallard Rooms 1 – 4
	Discussion Topics: 2014 MDWTSG Proceedings, 2015 Meeting Location, Impacts of Neonicotinoids on Larger Animals (Jensen), Committee Report to the MAFWA Directors Meeting (Rudolph),	
6:00 – 7:00	Dinner	Mallard Rooms 1 - 4
7:00	Evening Social	Mallard Rooms 1 - 4

Friday, September 12th

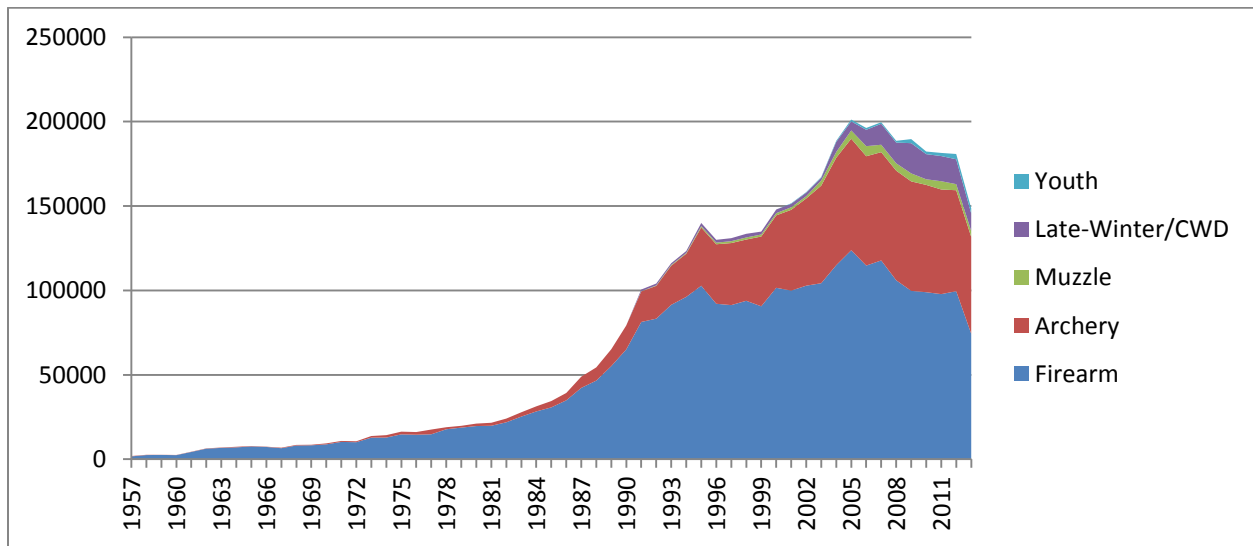
7:00 – 8:00	Breakfast	Dining Room
	Departure	

2014 Midwest Agency Deer Reports

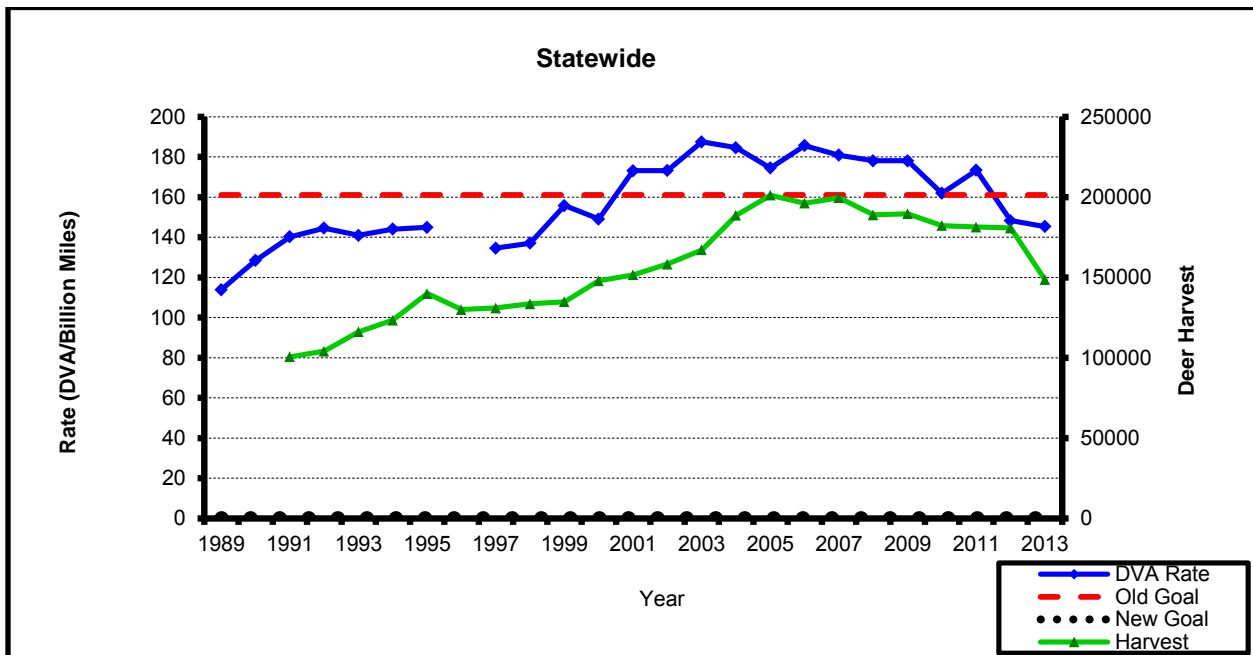
2014 Illinois Report MDWTSG

Current Harvest: The 2013-14 total deer harvest was 148,614; down 17.8% from the 180,811 reported in 2012-13. Harvest during every deer season was down when compared to 2012-13: Archery (-4.1%); Muzzleloader (-2.2%); Youth (-3.4%); Late-winter (-31.5%); CWD (-14.0%); and Firearm (-25.3%). Factors contributing to the decline include: 1) the ongoing effort to reduce deer-vehicle accident rates to goals established for each county and statewide; 2) two consecutive years of measurable EHD loss; and, 3) adverse weather which likely impacted hunter participation and/or deer movement during our 7-day firearm deer season.

Historical Harvest:



Population Estimate/Trend:



Regulation/legislation changes:

The 2013-14 season changes included adding a 3rd day to the¹⁷ Youth Deer Season which now includes the Monday of the Columbus Day weekend; and all Late-winter Season permits were available in unlimited quantities over-the-counter.

For 2014-15 we have removed 20 counties from our Late-winter Season as they have reached their deer-vehicle accident goal rates. We are looking at a handful of counties where archery harvest may be negatively impacting firearm hunting opportunities. A future reduction in bow hunter take may be necessary in those counties -- as was done in east-central Illinois during the early 2000's.

Urban/Special Hunts: Thirty-nine Deer Population Control Permits (DPCPs) were issued to 11 municipalities/agencies in seven counties. There were 1,938 deer authorized and 1,285 (66.3%) were collected. All adult animals taken on DPCPs are now sampled for CWD. Will and Winnebago county CWD-positive animals were detected during DPCP sampling in 2013-14. (See complete report, in "Relevant Links" section.)

Deer Management Assistance/Crop Damage: There were 264 Deer Removal Permits (DRPs) issued in 57 counties during 2013; compared to 310 issued in 2012. The 262 lethal removal permits authorized take of 2,062 (1560 antlerless; 61 antlered; 441 either sex) and 1,197 (58%) were collected. Seventy-two percent of permits issued were for excessive damage to corn and/or soybeans; 75% of all permits were issued during the period June through August. (See complete report, in "Relevant Links" section.)

DISEASES: 2013 was another year for relatively significant localized EHD loss (1,220), although not as many were reported as during the 2012 outbreak (2,968). There were 318 reports from 63 counties in 2013; down from the record number of reports (977) and counties (87) in 2012.

Chronic Wasting Disease (CWD) management continued in Illinois. There were 7,397 animals tested statewide, with 59 positives identified. Lake and Will counties were added to our list of those with documented CWD cases, now totaling 14 counties. Between 15 January and 31 March, 2014, agency sharpshooters took 721 deer (18 positive) from 87 sections in 13 counties. We returned to Winnebago and Boone counties after a one year hiatus. While hunters detected one Winnebago County positive (161 tested), sharpshooters detected 12 positives (143 tested -- DNR, 7 of 93; WCFPD, 5 of 50). Prevalence rates: for all adult deer was at 1.01%; adult males, 1.18%; and adult females, 0.85%. We have now documented 467 positives from 81,500+ animals tested. (See complete report, in "Relevant Links" section.)

Research: Recent research by scientists at the University of Illinois (Journal of Mammalogy 95 (3): 646-654) has found that the frequency of occurrence of long-distance dispersal movements by white-tailed deer in northern Illinois is probably higher than previously reported, and this behavior is a significant risk factor affecting the rate at which CWD spreads throughout Illinois' landscape. Their findings highlight the need for a strong surveillance program to identify new spark areas, followed by a management approach that can target local affected populations quickly and in such a way as to prevent establishment of new disease areas.

Hot Topics: The 25K drop in our firearm deer season harvest prompted much concern from deer hunters. The Illinois Whitetail Alliance (IWA) was formed "to assist DNR in properly managing for herd increase and restoration of trophy abundance." They seek limits on buck harvest, doe harvest and permits available to individual hunters; as well as a reduction to non-resident hunter quotas. They are making contacts with legislators, the Illinois Farm Bureau and others to gain support for changing Illinois' deer management program.

Board members of this group have wanted a 1 antlered buck limit for years, but IL hunters rejected that idea in the recent hunter survey conducted by the Illinois Natural History Survey. IWA also wants to eliminate the LWS and/or move it into September – another move strongly rejected by deer hunters in the random survey. Illinois hunters, however, did support their suggestion for increased penalties for deer violations, poachers/poaching.

Double-click box for **Late-winter/CWD Season** counties map



Or, link to **Late-winter Season counties**, statewide map:

<http://www.dnr.illinois.gov/conservation/wildlife/Documents/LateWinterDeerSeasonMap.pdf>

Double-click box for **Annual Deer Harvest Summary**



Or, link to Illinois deer harvest reports (2005-2013) may be found at this location on our website:

<http://www.dnr.illinois.gov/hunting/deer/Pages/AnnualDeerHarvestReports.aspx>

Double-click box for **Deer Population Control Permit Annual Report**



Double-click box for **Deer Removal Permit Annual Report**



Double-click box for **Chronic Wasting Disease 2013-14 Annual Report**



Or, link to all Illinois CWD information, including annual reports, may be found at this location on our website:

<http://www.dnr.illinois.gov/Programs/CWD/Pages/default.aspx>

2013 Indiana Deer Season Summary

Report to the Midwest Deer Study Group

Potosi, Missouri

September 9-12, 2014





“I do not hunt for the joy of killing but for the joy of living, and the inexpressible pleasure of mingling my life, however briefly, with that of a wild creature that I respect, admire, and value.” ---John Madson, Out Home, 1979

2013 Indiana Deer Harvest Summary

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Federal Aid in Wildlife Restoration Program

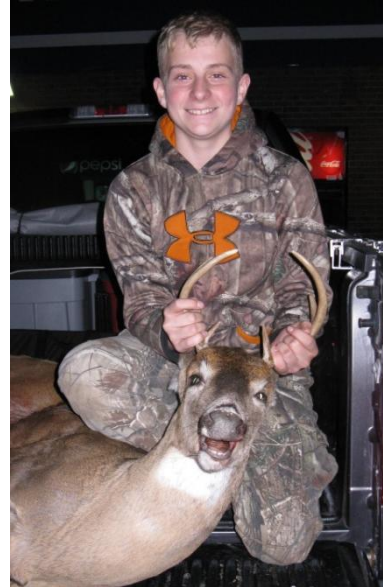
This program supports state fish and wildlife agencies to conserve, protect, and enhance fish, wildlife, their habitats, and the hunting, sport fishing and recreational boating opportunities they provide. This program was initiated in 1937 as the Federal Aid in Wildlife Act and created a system where by taxes are paid on firearms, ammunition and archery equipment by the public who hunts. Today this excise tax generates over a hundred million dollars each year that are dedicated to state wildlife restoration and management projects across the United States.



Overview

The 2013 Indiana deer hunting season comprised four seasons: Archery (Oct. 1 to Jan. 5), Firearms (Nov. 16 to Dec. 1), Muzzleloader (Dec. 7-22), and Late Antlerless (Dec. 26 to Jan. 5) season in selected counties. Additionally, there was a youth-only season (Sept. 28-29) that was open to youths age 17 or younger who were accompanied by an adult at least 18 years old. Youths could take multiple deer during this special season for the second consecutive year.

The statewide archery bag limit was two deer. Hunters could take one deer per license for a total of either two antlerless deer or one antlered and one antlerless deer. A hunter could take only one antlered deer during all statewide seasons combined using archery, firearm, or muzzleloader licenses. This was the second year that a crossbow was eligible for use through the entire archery season with the use of a crossbow license. Any deer taken with a crossbow counted towards the hunter's archery bag limit.



Archers could harvest deer in designated urban zones that did not count towards any other statewide bag limit. Each urban zone deer required a separate urban deer license, and hunters were required to harvest an antlerless deer prior to taking an antlered deer if hunting with an urban deer license. The archery season in urban deer zones opened two weeks prior to the opening of the early archery season on September 15 and continued through January 31. Archers were allowed to harvest up to either four antlerless deer or three antlerless and one antlered deer during this period. Any deer harvested in an urban deer zone with the appropriate license during this period were in addition to all other bag limits.

The bag limit during firearms season was one antlered deer, and the bag limit for the muzzleloader season was one either-sex deer (maximum of one antlered deer harvested per hunter). A single firearms license was required to hunt with any firearm (shotgun, muzzleloader, rifle, or handgun) during the firearms season, and a muzzleloader license (separate from the firearms license) was required to hunt during the muzzleloader season.

The resident deer license fee was \$24 and the nonresident fee was \$150. This was the second year that a deer license bundle was available, with a resident fee of \$65 and a nonresident fee of \$295. The deer license bundle allowed hunters the opportunity to take two antlerless deer and one antlered deer, or three antlerless deer, across all seasons. When an agricultural advantage could be gained, resident landowners who hunted on land they owned were exempt from purchasing deer licenses, as were lessees who farmed the land. Deer could be checked in online or by phone for the second consecutive year in 2013, though traditional check stations remained active.

Special public hunts were held at Muscatatuck and Big Oaks National Wildlife Refuges, Naval Surface Activity Crane, and Camp Atterbury Joint Maneuver Training Center.

Bonus Antlerless Permits

An unlimited number of bonus antlerless permits were available at every deer license vendor statewide, and each permit could be used in any county. County bag limits ranged from A to 8 (Figure 1). Permits were available to both resident and non-resident hunters.

Each permit was valid for one antlerless deer, and hunters were allowed to take as many bonus antlerless deer as desired, as long as the county antlerless bag limits were observed.

Bonus antlerless permits cost \$24 and \$150 for the first permit for residents and nonresidents, respectively. The second and each additional permit was \$15 for residents and \$24 for nonresidents.

Bonus antlerless permits could be used during all deer hunting seasons except for “A”-designated counties, where the license could only be used beginning on November 28th.

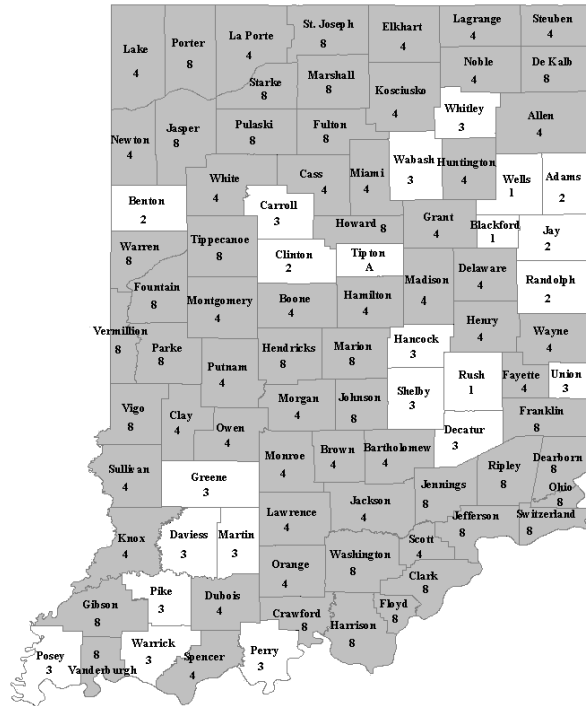


Figure 1. Antlerless deer bag limits in 2013. Shaded counties were eligible for the late antlerless season.

Deer Harvested by Season

A total of 125,635 deer were reported harvested in Indiana during the 2013 season (Figure 2). This harvest was 8% lower than the 136,248 deer harvested during the 2012 season. The reported antlered deer harvest of 46,240 was nearly identical to the 45,936 reported harvested in 2012. The antlerless harvest of 79,395 was 12% lower than the 90,312 harvested in 2012. In 2013, the reported harvest for total deer ranks sixth all-time, while the total antlerless deer harvest ranks as the fifth highest all-time in Indiana history. The antlered harvest ranks sixteenth all-time.

Of the 125,635 deer reported this year, 64,740 were checked in at check stations, 58,887 were checked in online, and 2,008 were checked in via phone. The phone call-in system cost users \$3/reported animal. Approximately 3.25 million deer have been reported harvested during the past 62 deer hunting seasons in Indiana.

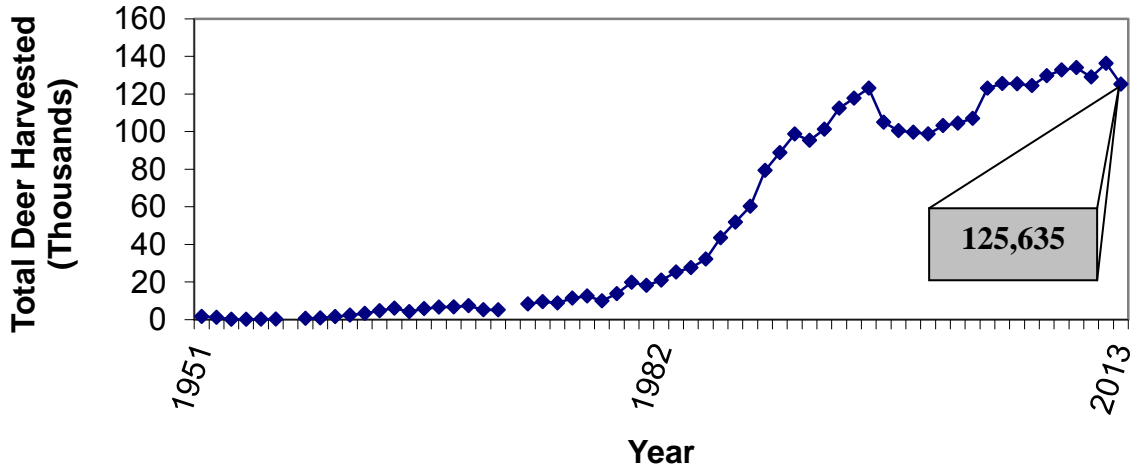


Figure 2. The number of deer harvested in Indiana deer hunting seasons 1951-2013.

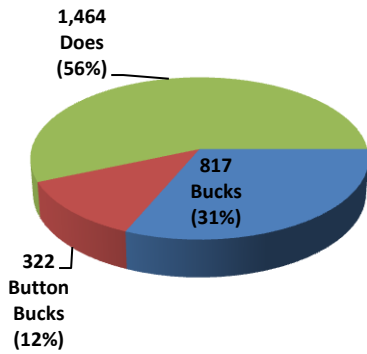


Figure 3. 2013 Youth Season harvest composition

The hunting season began with urban deer zones (Sept. 15) followed by a youth only weekend (Sept. 28-29). This season was created in 2006 and allowed youths 15 years and younger to harvest one antlerless deer. It was changed in 2009 to include all youths 17 years and younger. This year was the 4th year youths could harvest an antlered deer during this season, and the 2nd year they could harvest more than one deer during the youth season. A total of 2,603 deer were reportedly harvested in 2013 during this season, a decrease of 28% from the 3,597 in 2012. This season resulted in 2% of the total harvest (Table 1). Antlered bucks made up 31% of the harvest, while 12% of the harvest was composed of button bucks (Figure 3).

The archery season harvest (including Urban Deer Zones) of 34,477 deer composed 27% of the total harvest and was 4% less than the 36,033 harvested in 2012 (Table 1). Antlerless deer composed 67% of the total archery harvest, up 1 percentage point from 2012. Bucks made up 33% of the total harvest in archery season.



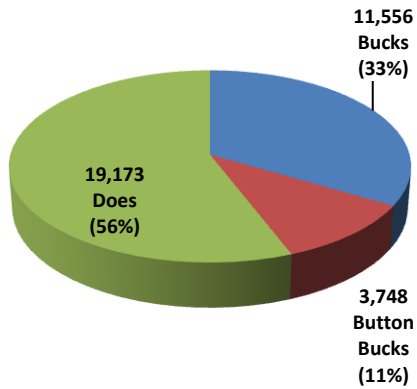


Figure 4. Archery Harvest composition in 2013

Table 1. Number of deer harvested in each segment of the 2013 Indiana deer hunting season. Percent of total harvest in parentheses (totals may not be exactly 100 due to rounding).

Season	Number of deer harvested		
	Antlered [#]	Antlerless	Total
Youth season (28-29 Sept)	817 (2)	1,786 (2)	2,603 (2)
Archery* (1 Oct - 5 Jan)	11,556 (25)	22,921 (29)	34,477 (27)
Firearms (16 Nov- 1 Dec)	31,216 (67)	40,556 (51)	71,772 (57)
Muzzleloader (7 - 22 Dec)	2,483 (5)	7,864 (10)	10,347 (8)
Late Antlerless** (26 Dec - 5 Jan)	168 (1)	6,268 (8)	6,436 (5)
Totals	46,240	79,395	125,635

*Includes Urban Deer Zones

**In 69 counties

#Includes shed buck harvest

The firearms season harvest of 71,772 deer was a decrease of nearly 4% from the 74,487 deer harvested in 2012 and composed 57% of the total harvest (Table 1). The antlerless harvest of 40,558 was nearly 10% less than the 2012 antlerless harvest of 44,835, while the antlered harvest of 31,212 was 5% more than the antlered deer harvest in 2012 (29,652). Antlered deer made up at least half of the total harvest only on opening weekend of firearm season (Nov. 16 and 17), while the harvest of antlerless deer outnumbered antlered deer during the remaining 15 days of the season (Table 2). During the opening weekend of firearms season, only 32% of the total firearm season harvest occurred, down from 50% in 2012. This was likely primarily due to a severe storm that came through the entire state on Sunday afternoon. Opening weekend contributed to 19% of the statewide total harvest for all seasons, which was 8 percentage points less than the opening weekend harvest from 2012. Antlerless deer composed 57% (81% of which were does) of the firearm season harvest (Figure 5).

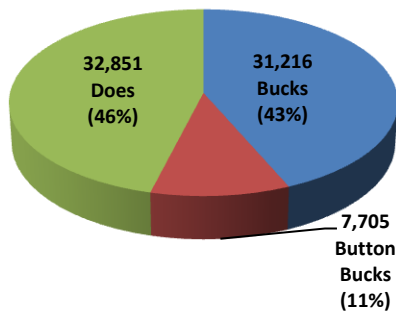


Figure 5. 2013 Firearms season harvest composition

Table 2. Number of deer harvested on each day of the 2013 Indiana firearm season (includes deer taken by bow, shotgun, pistol, rifle, and muzzleloader).

Date	Day	Antlered		Antlerless		Total	
		N	Daily %	N	Daily %	N	Total %
16 November	Sat	11,399	55	9,291	45	20,690	28
17 November	Sun	1,707	51	1,654	49	3,361	5
18 November	Mon	2,421	48	2,591	52	5,012	7
19 November	Tue	2,046	43	2,658	57	4,704	6
20 November	Wed	1,522	42	2,069	58	3,591	5
21 November	Thu	753	44	940	56	1,693	2
22 November	Fri	995	42	1,401	58	2,396	3
23 November	Sat	2,805	39	4,457	61	7,262	10
24 November	Sun	1,613	38	2,615	62	4,228	6
25 November	Mon	492	31	1,118	69	1,610	2
26 November	Tue	475	26	1,368	74	1,843	2
27 November	Wed	485	26	1,409	74	1,894	3
28 November	Thu	818	25	2,435	75	3,253	4
29 November	Fri	1,193	27	3,295	73	4,488	6
30 November	Sat	1,377	27	3,655	73	5,032	7
1 December	Sun	919	28	2,379	72	3,298	4
Totals*		31,020		43,335		74,355	100

* Totals differ from those in previous table because date of harvest is not known for some registered deer. This table includes deer from both the firearms season and the archery season during this time period.

The muzzleloader season harvest of 10,347 composed 8% of the total harvest, down 1 percentage point from last year (Table 1). This year's reported muzzleloader season harvest was 14% lower than the 2012 muzzleloader harvest (12,040). As in years past, a large percentage of the deer harvested during the muzzleloader season were antlerless (75%) (Figure 6).

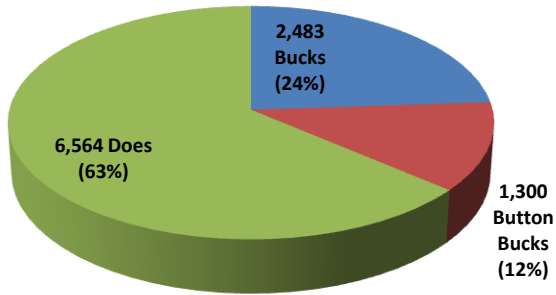


Figure 6. 2013 Muzzleloader season harvest composition

The late antlerless season in counties with a bonus county designation of 4 or more (Figure 1) was held for the second year. A total of 69 counties met this criterion in 2013, down from 74 in 2012. The reported harvest during this season was 6,436, with 81% of the harvest reported as does (Figure 7). Nearly 3% of the harvest was reported as adult males who had already shed their antlers.

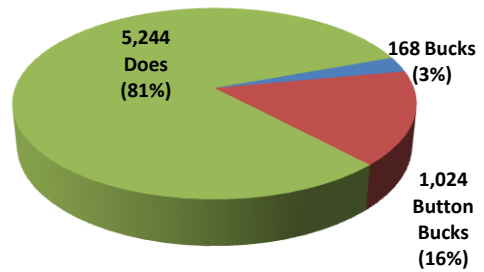


Figure 7. 2013 Late antlerless season harvest composition

Harvest by Equipment Type

Six types of equipment were legal for hunting deer during 2013: archery, shotguns, muzzleloaders, handguns, crossbows, and rifles. Rifle cartridges were restricted to .357 diameter or larger bullet, and case length must be between 1.16 and 1.8 inches. Harvest by equipment type is illustrated in Figure 8. Shotgun harvest decreased nearly 11% from 2012, while muzzleloader decreased 16%. Harvest by archery and handguns also decreased (12% and 14% respectively), while reported harvest by crossbow and rifle continued to increase, up 20% and 5% from 2012, respectively (Table 3). This was the second year that crossbows were allowed to be used throughout the archery season without restriction, facilitating the rapid increase in use since 2012.

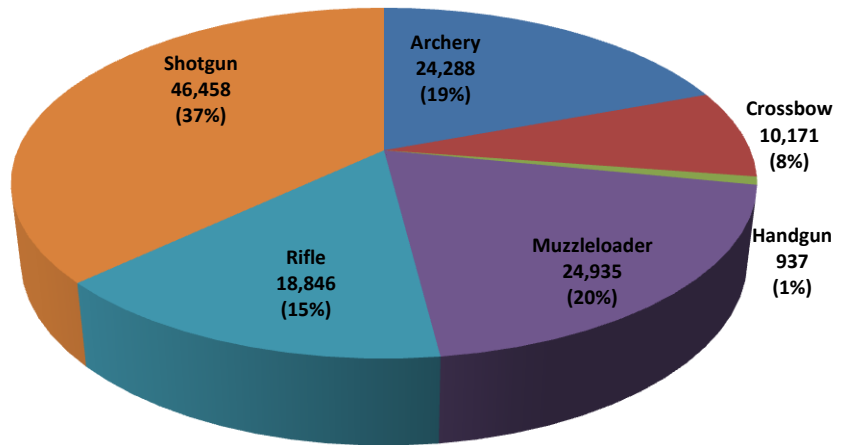
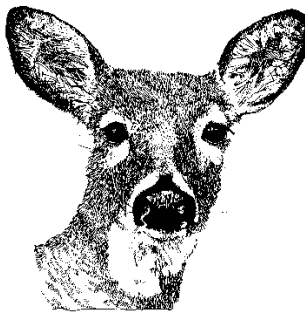


Figure 8. 2013 harvest by equipment type in Indiana

Table 3. Number of deer harvested by type of legal hunting equipment between 2008-2013 seasons*. Approximate percent of total harvest shown in parentheses.

Equipment type	2008	2009	2010	2011	2012	2013
Bow	26,369 (20)	28,497 (21)	27,186 (20)	26,715 (21)	27,580 (20)	24,288 (19)
Shotgun	68,520 (53)	65,839 (50)	61,920 (46)	54,683 (42)	51,815 (38)	46,458 (37)
Muzzleloader	30,295 (23)	32,745 (25)	33,527 (25)	33,571 (26)	29,488 (22)	24,935 (20)
Handgun	1,949 (2)	1,932 (1)	1,318 (1)	1,028 (1)	1,086 (1)	937 (1)
Rifle	1,788 (1)	2,809 (2)	9,125 (7)	11,930 (9)	17,827 (13)	18,846 (15)
Crossbow	827 (1)	930 (1)	928 (1)	1,091 (1)	8,452 (6)	10,171 (8)
Totals	129,748	132,752	134,004	129,018	136,248	125,635

*Values within this table do not exactly equal those tallied by season (page 7, Table 1) due to the fact that multiple equipment types can be used during the firearm season. Additionally, differences arise due to the different methods required to analyze data when either the equipment or the season is unknown.



Harvest by License Status

Licensed resident hunters (lifetime, resident, and youth license holders) accounted for over 82% of the total deer harvest (Table 4).

Licensed nonresident hunters harvested over 3% of the total harvest. Hunters with a regular yearly deer hunting license (resident plus non-resident) took only ~52% of the total deer harvest; hunters not paying the full yearly price (i.e. lifetime license holders, youth license holders, landowners/tenants, and military personnel) took nearly 50% of the total harvest. Landowners and lessees who hunted on their own land without a license and military personnel on official leave status accounted for

~14% of the total deer harvest. Of the deer harvested by license-exempt hunters, nearly 99% were taken by landowners/tenants while only 1% were taken by military personnel on leave.

Table 4. Harvest distribution of deer by license type during 2013 hunting season.

License Status	Deer Harvested	Percent of Harvest
Resident	61,471	48.93
Lifetime	30,593	24.35
Land Owner	17,414	13.86
Youth	12,039	9.58
Nonresident	3,887	3.09
Military	231	0.18
Total	125,635	100.0

Harvest Age and Sex Structure

The age and sex structure of the 2013 deer harvest was 37% adult males (antlered bucks), 37% adult females, 11% male fawns (button bucks), and 15% female fawns (Table 5). The proportion of reported antlered deer in the harvest is the second lowest in Indiana's history. About 39% of the antlered bucks and 35% of the adult does harvested during 2013 were yearlings (1.5 years old) (Figure 9). The percentage of harvested yearling bucks decreased by 2 percentage points in 2013 from 2012.

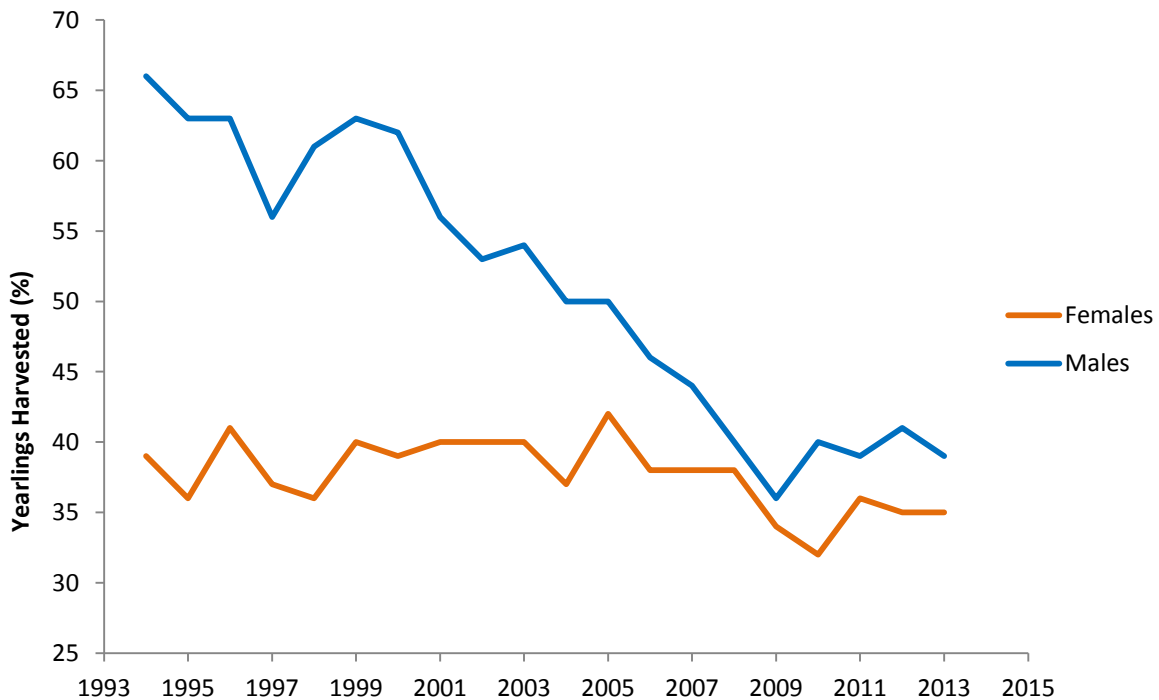


Figure 9. Proportion of male and female yearlings in the harvest (1.5 years old), as determined by aging during the first weekend of the firearms season, for years 1994-2013.

Table 5. Sex and age structure of the Indiana deer harvest between 1987-2013, as determined from check stations and online registration.

Year	Adults		Fawns		Total
	Males (%)	Females (%)	Males (%)	Females (%)	
1987	29,530 (57)	11,139 (21)	6,164 (12)	4,945 (10)	51,778
1988	34,358 (57)	13,170 (22)	7,050 (12)	5,656 (10)	60,234
1989	40,503 (51)	19,464 (24)	10,737 (14)	8,614 (11)	79,318
1990	43,080 (48)	23,680 (27)	12,373 (14)	9,630 (11)	88,763
1991	41,593 (42)	31,211 (32)	14,626 (15)	11,253 (11)	98,683
1992	43,508 (46)	25,387 (27)	14,262 (15)	12,157 (13)*	95,314
1993	44,424 (44)	27,704 (27)	14,751 (15)	14,335 (14)*	101,214
1994	50,812 (45)	32,466 (29)	15,487 (14)	13,651 (12)*	112,416
1995	47,098 (40)	40,946 (35)	16,398 (14)	13,287 (11)*	117,729
1996	47,315 (38)	39,913 (32)	17,307 (14)	18,551 (15)*	123,086
1997	42,537 (41)	35,163 (34)	14,039 (13)	13,198 (12)*	104,937
1998	44,955 (45)	30,711 (31)	12,257 (12)	12,538 (12)*	100,461
1999	46,371 (46)	30,474 (31)	11,645 (12)	11,129 (11)*	99,618
2000	44,621 (45)	31,986 (32)	11,072 (11)	11,046 (11)*	98,725
2001	48,357 (47)	31,806 (31)	11,230 (11)	11,770 (11)*	103,163
2002	47,177 (45)	35,357 (34)	11,291 (11)	10,603 (10)*	104,428
2003	49,533 (46)	36,303 (34)	10,262 (10)	10,887 (10)*	106,986
2004	54,743 (44)	41,749 (34)	12,501 (10)	14,065 (11)*	123,058
2005	52,488 (42)	44,286 (35)	13,030 (10)	15,722 (13)*	125,526
2006	49,097 (39)	45,257 (36)	13,688 (11)	17,339 (14)*	125,381
2007	49,375 (40)	44,514 (36)	13,313 (11)	17,225 (14)*	124,427
2008	50,845 (39)	46,666 (36)	13,083 (11)	19,154 (15)*	129,748
2009	52,878 (40)	48,222 (36)	13,040 (10)	18,291 (14)*	132,431
2010	53,007 (40)	49,911 (37)	13,367 (10)	17,719 (13)*	134,004
2011	50,717 (39)	45,931 (36)	13,058 (10)	19,312 (15)*	129,018
2012	45,936 [#] (34)	54,983 (40)	15,911 (12)	19,418 (14)*	136,248
2013	46,240 [#] (37)	46,229 (37)	14,100 (11)	19,066 (15)*	125,635

* Number of adult and fawn females is projected from the % fawns of all females aged at the biological check stations (not from the ratio of fawn doe to fawn bucks in the total deer harvest).

Includes shed antlered bucks



Deer License Sales

Deer license sales decreased this year from 2012 by 4.5% (Table 6), but the number of privileges (number of deer legally allowed to be harvested) only decreased slightly (<1%) due to the increase in license bundle purchases, which allows for the taking of up to 3 deer per license bundle sold.

Table 6. Deer license sales in Indiana by type, 2010-2013.

	2010	2011	2012	2013*
Resident Deer License Bundle	n/a	n/a	56,606	59,546
Resident Archery/Crossbow/Urban	59,473	60,844	33,428	32,669
Resident Firearm	102,626	103,284	57,092	52,175
Resident Muzzleloader	21,975	23,956	7,883	6,450
Resident Military/Refuge	2,541	3,138	1,413	1,116
Resident Bonus Antlerless	70,673	73,287	32,403	27,993
Nonresident	11,197	11,889	10,717	10,626
Youth	38,330	39,030	39,389	41,137
Total (excluding Youth)	268,485	276,398	199,542	190,575

*Total numbers subject to change slightly via refunds or voids

Distribution of the Harvest

The number of deer harvested in individual counties ranged from 91 in Tipton County to 3,454 in Harrison County (Table 7). Harvest exceeded 1,000 deer in 57 counties; 2,000 deer in 19 counties; and 3,000 deer in three counties. The antlered buck harvest exceeded 1,000 in three counties, while the antlerless harvest exceeded 1,000 deer in 31 counties compared with 42 in 2011. Antlerless deer composed at least 50% of the total harvest in 90 of the state's 92 counties in 2013, similar to 2012. The counties with the highest harvests were Harrison, Washington, Switzerland, Franklin, Steuben, Noble, Parke, Jefferson, Lawrence, and Orange. The counties with the lowest harvests were Tipton, Benton, Blackford, Hancock, Rush, Clinton, Wells, Howard, Shelby, and Marion.



Table 7. Number of deer harvested in each Indiana²⁶ county during 2013 (after adjustment for unknowns).

County	Number Harvested			County	Number Harvested		
	Antlered [#]	Antlerless	Total		Antlered [#]	Antlerless	Total
Adams	213	304	517	Lawrence	882	1,512	2,394
Allen	636	1,031	1,667	Madison	178	369	547
Bartholomew	482	830	1,312	Marion	120	337	457
Benton	59	55	114	Marshall	728	1,470	2,198
Blackford	114	149	263	Martin	626	956	1,582
Boone	179	291	470	Miami	431	742	1,173
Brown	678	1,281	1,959	Monroe	705	1,065	1,770
Carroll	280	491	771	Montgomery	425	695	1,120
Cass	448	728	1,176	Morgan	560	784	1,344
Clark	643	1,287	1,930	Newton	340	457	797
Clay	420	631	1,051	Noble	872	1,762	2,634
Clinton	160	226	386	Ohio	295	611	906
Crawford	864	1,478	2,342	Orange	859	1,501	2,360
Daviess	381	702	1,082	Owen	768	944	1,712
Dearborn	742	1,483	2,225	Parke	907	1,538	2,445
Decatur	324	466	790	Perry	790	1,093	1,883
DeKalb	769	1,316	2,085	Pike	604	815	1,419
Delaware	258	449	707	Porter	417	1,096	1,513
Dubois	661	1,319	1,980	Posey	536	735	1,271
Elkhart	496	850	1,346	Pulaski	641	1,135	1,776
Fayette	291	626	917	Putnam	787	985	1,772
Floyd	292	486	778	Randolph	240	327	567
Fountain	498	919	1,417	Ripley	697	1,268	1,965
Franklin	877	1,864	2,741	Rush	165	186	351
Fulton	537	988	1,525	St. Joseph	416	818	1,234
Gibson	506	969	1,475	Scott	435	725	1,160
Grant	281	437	718	Shelby	183	268	451
Greene	928	1,306	2,234	Spencer	598	790	1,388
Hamilton	162	324	486	Starke	540	1,101	1,641
Hancock	128	192	320	Steuben	1,006	1,646	2,652
Harrison	1,216	2,238	3,454	Sullivan	702	1,025	1,727
Hendricks	253	386	639	Switzerland	931	2,160	3,091
Henry	232	351	583	Tippecanoe	428	849	1,277
Howard	125	278	403	Tipton	54	37	91
Huntington	370	515	885	Union	198	316	514
Jackson	820	1,443	2,263	Vanderburgh	279	678	957
Jasper	558	853	1,411	Vermillion	380	608	988
Jay	306	585	891	Vigo	617	815	1,432
Jefferson	780	1,630	2,410	Wabash	454	731	1,185
Jennings	805	1,373	2,178	Warren	415	836	1,251
Johnson	235	393	628	Warrick	721	817	1,538
Knox	364	513	877	Washington	1,085	2,044	3,129
Kosciusko	805	1,472	2,277	Wayne	366	633	999
Lagrange	669	1,348	2,017	Wells	178	218	396
Lake	432	856	1,288	White	352	604	956
La Porte	633	1,032	1,665	Whitley	416	551	967

* Totals may be off ±1 due to rounding during partitioning of harvested deer of unknown sex or county.

Includes shed antlered bucks

Chronic Wasting Disease

Chronic Wasting Disease (CWD) is one of a group of diseases called Transmissible Spongiform Encephalopathies, which is a variant of scrapie in sheep and Creutzfeldt-Jakob disease in humans. The agents of CWD are called prions which are abnormal, protease-resistant forms of cellular proteins normally synthesized in the central nervous system and lymphoid tissues. Prions that cause CWD are highly resistant to heat or disinfectant. No study has ever proven that CWD is transmissible to humans.

CWD has been reported in Wisconsin, Illinois, West Virginia, among other states. In 2002, Indiana created a monitoring program to detect the presence of CWD, which focused on removing the obex or the retropharyngeal gland from random hunter harvested deer throughout the state (active surveillance). Reports of outwardly noticeable sick deer are also tested (targeted surveillance). This monitoring continues today, as well as testing random samples of road killed deer which was instituted in 2007.

The Division of Fish and Wildlife's 2013 CWD sampling effort collected 1,026 deer from hunter harvested and road killed deer. Lab results failed to detect CWD in any samples in 2013. CWD has not been detected in over 13,200 deer during this monitoring period (2002-present).

Bovine Tuberculosis

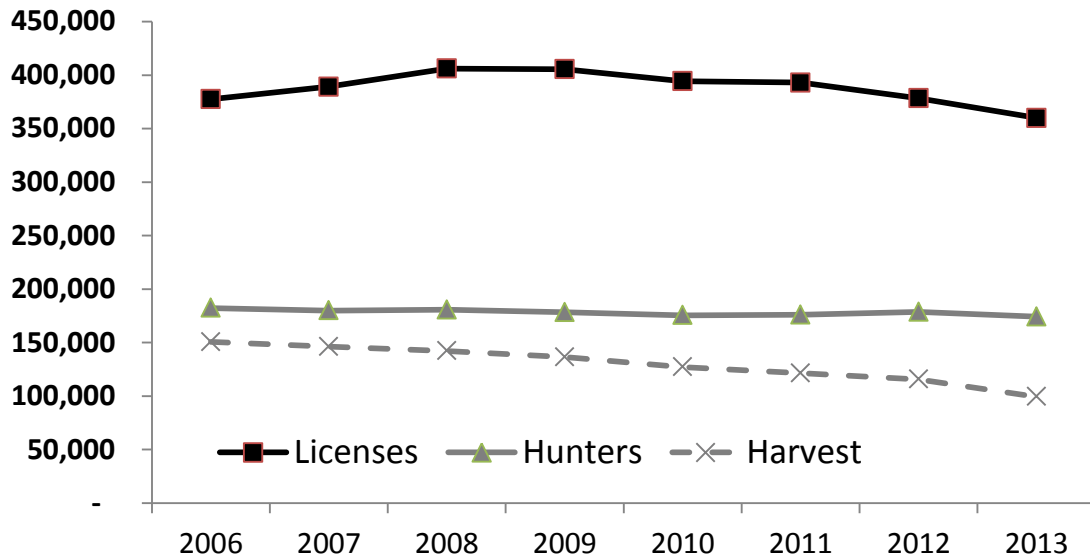
The Indiana Division of Fish and Wildlife, along with the Indiana Board of Animal Health and the United States Department of Agriculture, participated in the collection and testing of free ranging white-tailed deer for Bovine Tuberculosis (TB) in 2013. A total of 102 deer were sampled from Franklin, Fayette, and Dearborn County, and analysis from Purdue Animal Disease Diagnostic Lab and the National Veterinary Services Laboratory is complete and failed to detect the presence of TB in any free ranging deer this year. Indiana has tested over 1,200 deer for TB during the past four years and has failed to detect the presence of TB in the free ranging deer herd.

For more information on deer health, visit www.in.gov/dnr/fishwild.



Midwest Deer and Turkey Group Report: Iowa 2013/14 Season

There were 18,498 fewer deer licenses issued for the 2013/14 deer season compared to 2012/13. There were 9,829 fewer antlerless licenses and 8,669 fewer any-deer licenses. This is a decline of 5% from 2012 and is 11% lower than the peak in 2008. The reduction in license sales is likely related to lower deer numbers, colder than normal weather in December and January and reduced antlerless quotas in some counties. The number of hunters declined by 3% from 2012 and is 4% lower than the peak in 2006.



The reported harvest declined by about 14% when compared to 2012 and is 34% lower than in 2006. The reduced kill is directly related to the above factors as well as the reduction in deer numbers statewide. Does made up 50% of the reported harvest in 2013.

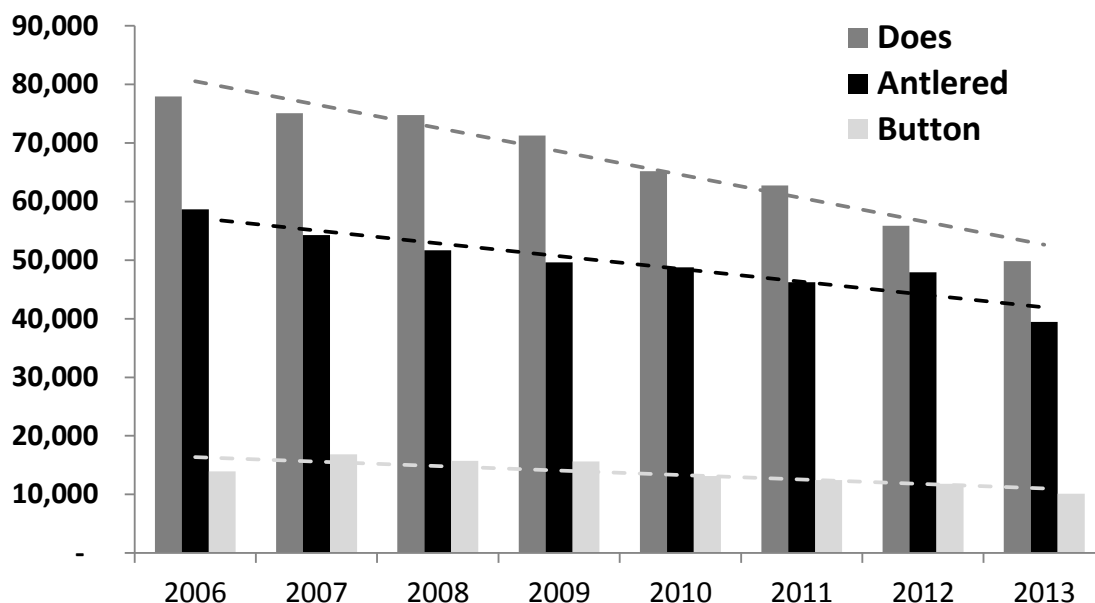
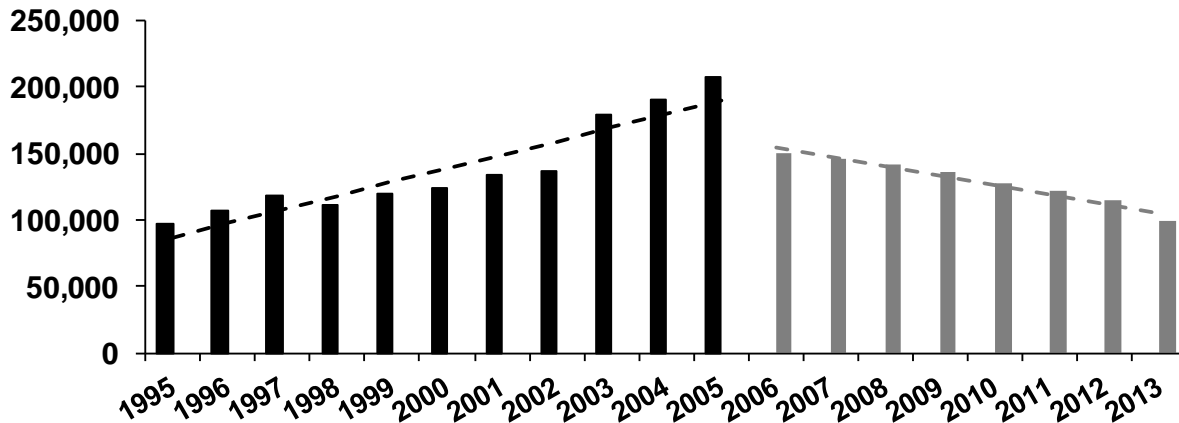


Table 1. License sales and the number of deer reported killed during the 2013/14 deer season.

Season	Licenses	Reported Harvest				Success Rate	% Does	
		Does	Antlered Bucks	Buttons Bucks	Shed Bucks			Total
Youth	10,634	1,353	1,665	273	8	3,299	31%	41%
Disabled	386	65	50	11	0	126	33%	52%
Archery	89,286	8,227	10,484	1,560	47	20,319	23%	40%
Early Muzz	11,832	1,951	1,770	303	3	4,027	34%	48%
Nov Antlerless								
Gun 1 (Paid)	71,169	11,753	10,907	2,788	81	25,530	36%	46%
Gun 2 (Paid)	61,439	8,845	5,886	2,055	126	16,912	28%	52%
Gun L/T	40,197	5,182	2,951	1,088	50	9,271	23%	56%
Late Muzz	34,831	3,634	2,301	691	202	6,828	20%	53%
Jan Antlerless	17,219	3,440	7	625	306	4,379	25%	79%
Special Hunts	4,569	1,678	69	273	24	2,044	45%	82%
Depredation	3,786	1,572	23	195	17	1,807	48%	87%
Nonresident	14,608	2,129	2,440	262	30	4,861	33%	44%
Total	359,956	49,829	38,553	10,124	894	99,403	28%	50%

The number of deer harvested increased by 113% from 1995 to 2005 and decreased by 34% from 2006 to 2013.

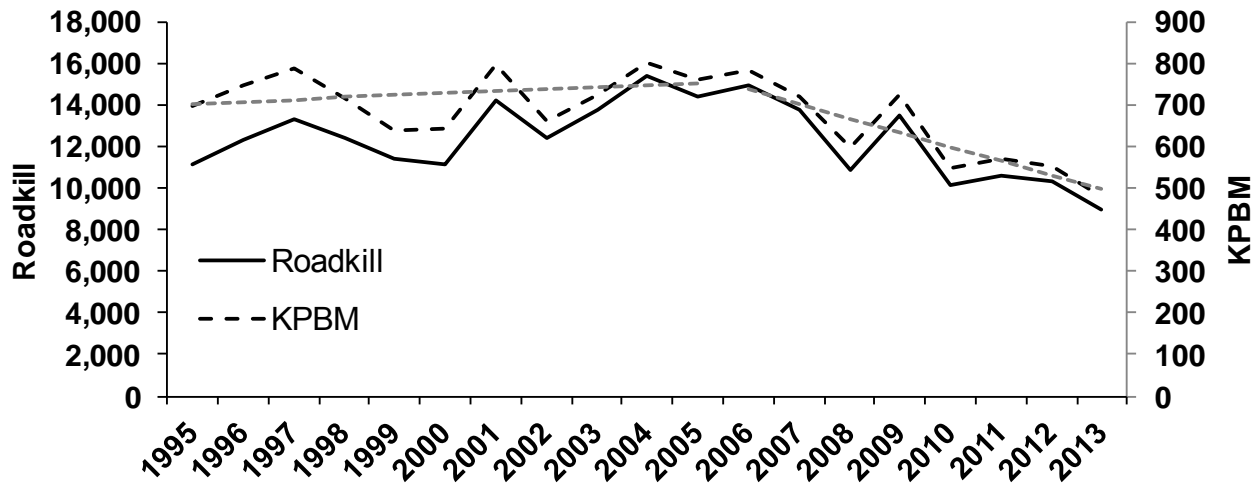


Beginning in 2006 the harvest is reported by all hunters electronically and is not directly comparable to the harvest estimates prior to that which were estimated through a mail survey.

Population Trend Surveys

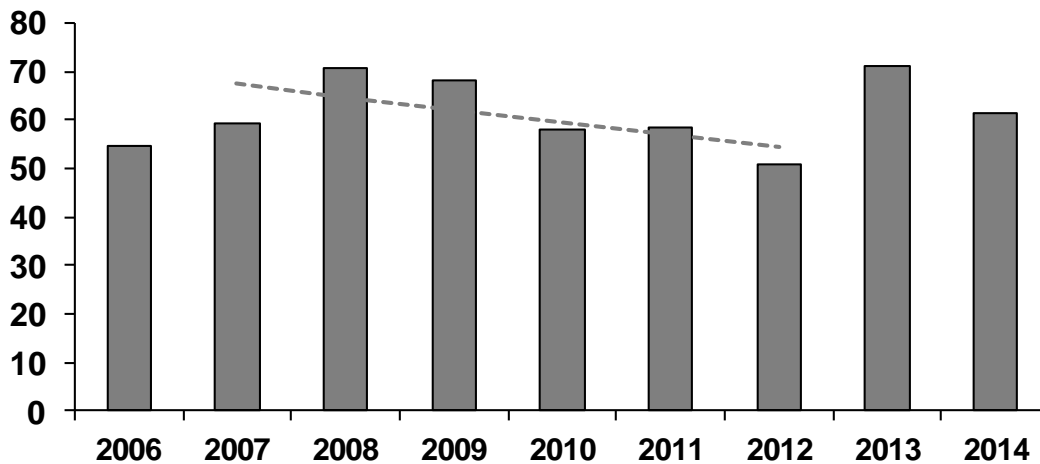
Three techniques are currently used to monitor trends in Iowa deer populations. These are 1) spotlight surveys conducted in April, 2) a record of the number of deer killed on Iowa's rural highways throughout the year coupled with annual highway use estimates, and 3) the bowhunter observation survey conducted during October–November. All of these surveys correlate well with the corrected harvest estimates and appear to provide reliable long-term trend indices. However, any of these surveys exhibit annual variability due to the survey conditions, deer behavior, and habitat conditions.

Road-killed deer information has been collected in Iowa since 1951. The information is collected by the Department of Transportation personnel and law enforcement officers throughout Iowa on rural interstates and state highways. The number of deer killed on rural highways decreased by about 11% in 2013. The estimated number of vehicle miles driven increased only slightly in 2013 when compared to 2012 and the resulting adjusted road kill (kills per billion miles – Kpbm) also decreased by about 11% overall. The reported number of road killed deer increased by 9% from 1995 to 2005 and decreased by 39% from 2006 to 2013 when adjusted for the changes in traffic volume (Kpbm).

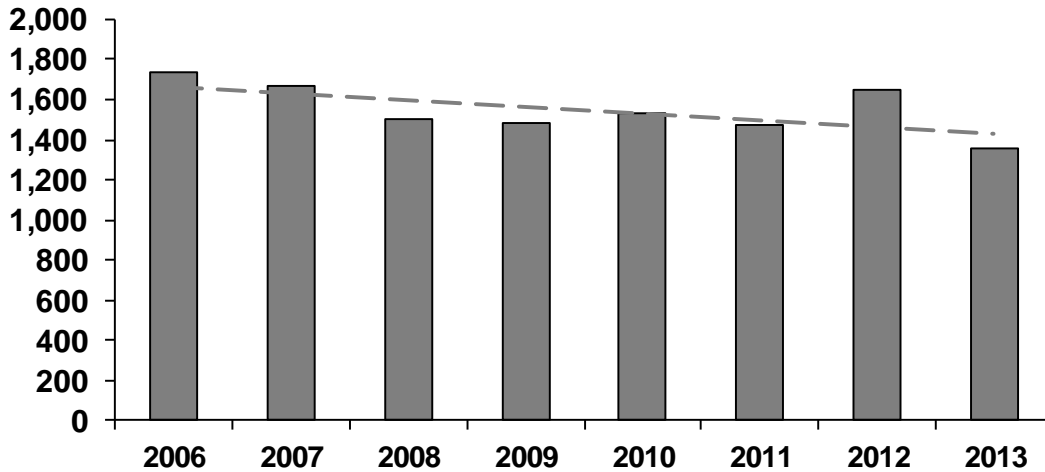


The spotlight survey routes were set up to be more representative in 2006. There are 199 transects (2 per county except for one county which has 3 transects) for a total of 4,750 miles. This is more than double the total length of the previous spotlight surveys which were not transects. Location, distance, and bearing are recorded for each deer/deer group observed allowing for density estimates to be calculated. The number of deer observed per 25 miles in 2014 decreased by 14% on the survey.

Deer per 25 miles on the spotlight survey.

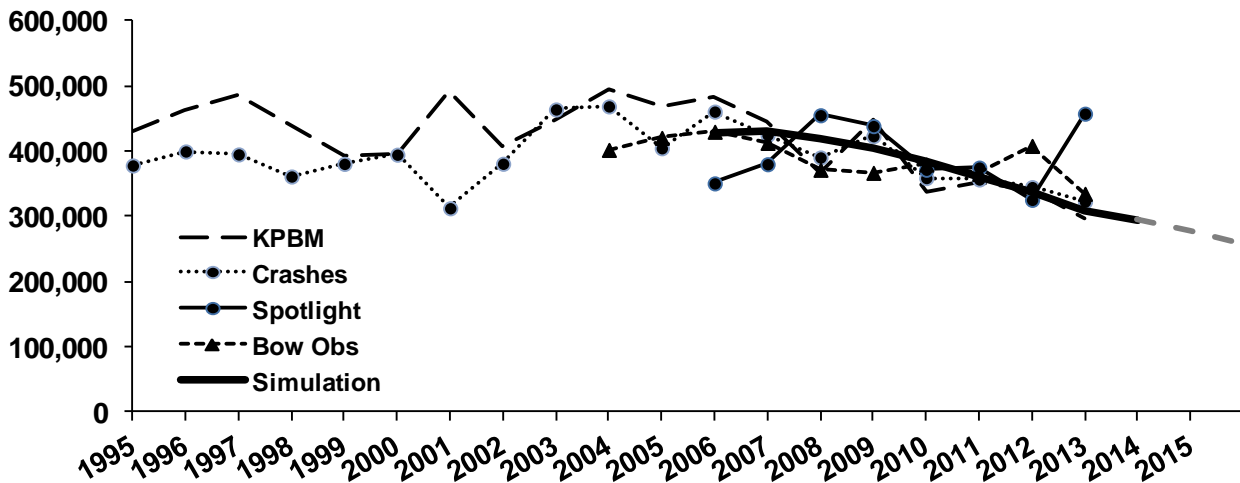


The bowhunter observation survey, which was initiated in the fall of 2004, is a stratified random sample of avid bowhunters (hunters who have purchased archery licenses for at least 3 consecutive years). The tactics used by bow hunters (stand hunting) make it useful for gathering observational data. Bow hunters are responsible for recording the date and time of their hunts and also observations of deer along with other selected animals. The average number of deer sighted per 1000 hours by bow hunters decreased by 22% from 2006 to 2013.



The value of the variety of population trend surveys utilized is that no single survey method is relied upon to determine current trends in Iowa’s deer herd. Instead simulation models use the harvest data to project population simulations that “best fit” all the available trend information.

The best fit simulation model declines by 30% from 2006 to 2014 and indicates that the rate of decline in deer numbers will continue unless changes are made to reduce the number of does killed.



The number of deer licenses issued and the reported deer harvest by season and license type for the 2013/14 deer season.

Season	License Type	Licenses	Reported Harvest					Success Rate	% Does	
			Does	Antlered Bucks	Buttons Bucks	Shed Bucks	Total			
Youth	Paid	Either-sex	9,962	1,200	1,650	251	8	3,109	31%	39%
	Paid	Antlerless	509	132	2	20	0	154	30%	86%
	L/T	Either-sex	109	12	13	0	0	25	23%	48%
	L/T	Antlerless	54	9	0	2	0	11	20%	82%
Disabled	Paid	Either-sex	291	32	45	4	0	81	28%	40%
	Paid	Antlerless	66	28	2	5	0	35	53%	80%
	L/T	Either-sex	15	2	3	0	0	5	33%	40%
	L/T	Antlerless	14	3	0	2	0	5	36%	60%
Early Muzzleloader	Paid	Either-sex	7,497	853	1,536	163	2	2,554	34%	33%
	Paid	Antlerless	1,632	685	6	100	1	792	49%	86%
	L/T	Either-sex	1,690	153	224	15	0	392	23%	39%
	L/T	Antlerless	1,013	260	4	25	0	289	29%	90%
Nov	Paid	Antlerless								
	L/T	Antlerless								
Gun 1	Paid	Either-sex	53,739	5,593	10,820	1,551	54	18,019	34%	31%
	Paid	Antlerless	17,430	6,160	87	1,237	27	7,511	43%	82%
Gun 2	Paid	Either-sex	44,691	3,996	5,828	1,100	79	11,003	25%	36%
	Paid	Antlerless	16,748	4,849	58	955	47	5,909	35%	82%
Gun 1&2	L/T	Either-sex	23,468	1,466	2,841	394	24	4,725	20%	31%
	L/T	Antlerless	16,729	3,716	110	694	26	4,546	27%	82%
Late Muzzleloader	Paid	Either-sex	19,195	1,166	2,117	256	73	3,612	19%	32%
	Paid	Antlerless	10,454	1,922	3	363	104	2,392	23%	80%
	L/T	Either-sex	2,107	114	176	17	5	312	15%	37%
	L/T	Antlerless	3,075	432	5	55	20	512	17%	84%
Archery	Paid	Either-sex	53,993	1,031	9,433	267	26	10,758	20%	10%
	Paid	Antlerless	25,729	6,002	52	1,103	15	7,172	28%	84%
	L/T	Either-sex	4,676	146	985	29	4	1,164	25%	13%
	L/T	Antlerless	4,666	1,014	14	154	2	1,184	25%	86%
January	Paid	Antlerless	12,002	2,957	4	528	263	3,753	31%	79%
	L/T	Antlerless	5,217	483	3	97	43	626	12%	77%
Senior crossbow	Paid	Antlerless	222	34	0	7	0	41	18%	83%
Special Hunts Depredation	Paid	Antlerless	4,569	1,678	69	273	24	2,044	45%	82%
	Paid/LT	Antlerless	3,786	1,572	23	195	17	1,807	48%	87%
Nonresident	Paid	Either-sex	6,025	97	2,320	22	2	2,441	41%	4%
		Antlerless	8,583	2,032	120	240	28	2,420	28%	84%
Total	Paid	Either-sex	195,393	13,968	33,749	3,614	244	51,577	26%	27%
	Paid	Antlerless	101,730	28,051	426	5,026	526	34,030	33%	82%
	L/T	Either-sex	32,065	1,893	4,242	455	33	6,623	21%	29%
	L/T	Antlerless	30,768	5,917	136	1,029	91	7,173	23%	82%
		Either-sex	227,458	15,861	37,991	4,069	277	58,200	26%	27%
		Antlerless	132,498	33,968	562	6,055	617	41,203	31%	82%
	Paid		297,123	42,019	34,175	8,640	770	85,607	29%	49%
	L/T		62,833	7,810	4,378	1,484	124	13,796	22%	57%
Total		359,956	49,829	38,553	10,124	894	99,403	28%	50%	

2014 Kansas Deer Program Report

I. Current Harvest

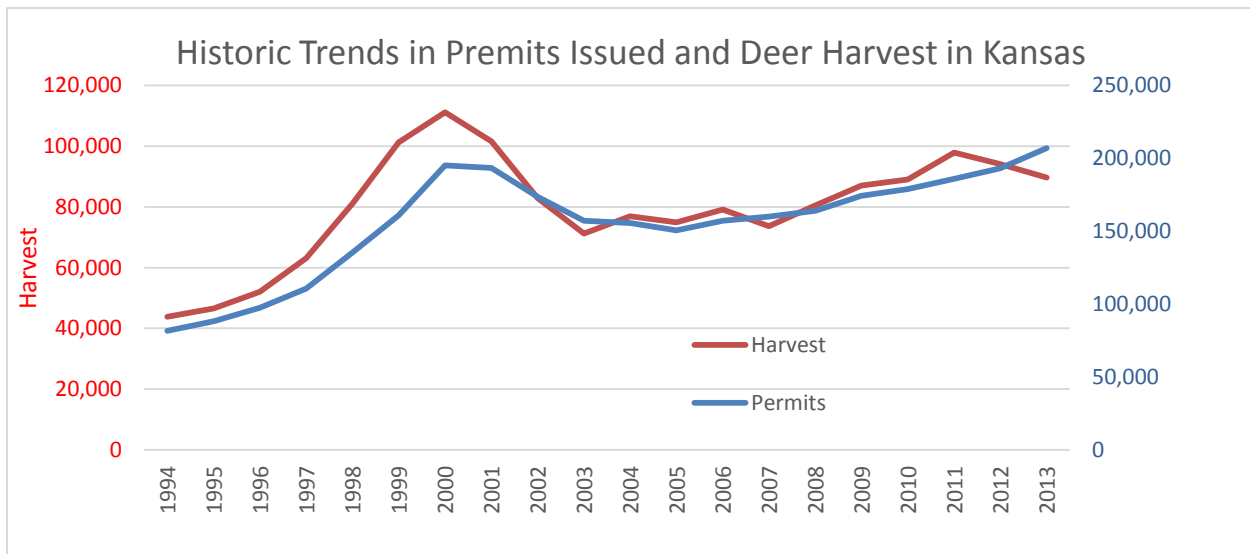
Hunter harvest of deer during the 2013-14 seasons was estimated to be 89,665; down 4.7% from the 94,070 estimated for the 2012-13 season. The Kansas Outdoor Automated Licensing System data showed 121,226 people purchased 207,419 permits for the 2013-14 seasons.

Harvest Age Structure						
	Antlered Ad Bucks	Male Fawns	Adult Does	Female Fawns	Ad Buck Shed Antler	Total
White-tailed Deer	39,068	3,650	39,873	3,090	1,267	86,950
Mule Deer	2,168	36	462	24	25	2,715
By Residents	30,228	3,248	32,544	2,798	992	69,810
By Non-Residents	11,008	439	7,790	316	300	19,853
Total	41,236	3,686	40,335	3,114	1,292	89,665

Harvest By Equipment				
	Compound Bow	Recurve / Long Bow	Crossbow	Total
Archery	25,394	795	3,189	29,378
	In-Line MZ	Traditional MZ	Total	
Muzzleloader	3,626	499	4,125	
	Centerfire Rifle	Shotgun and Slug	Pistol	Total
Firearms	55,757	309	96	56,162

Harvest By Season						
Youth/ Disability	Early MZ	Pre-Rut	Archery	Firearms	Whitetail Antlerless-Only	Total
1,037	3,614	1,756	33,500	38,207	11,550	89,664

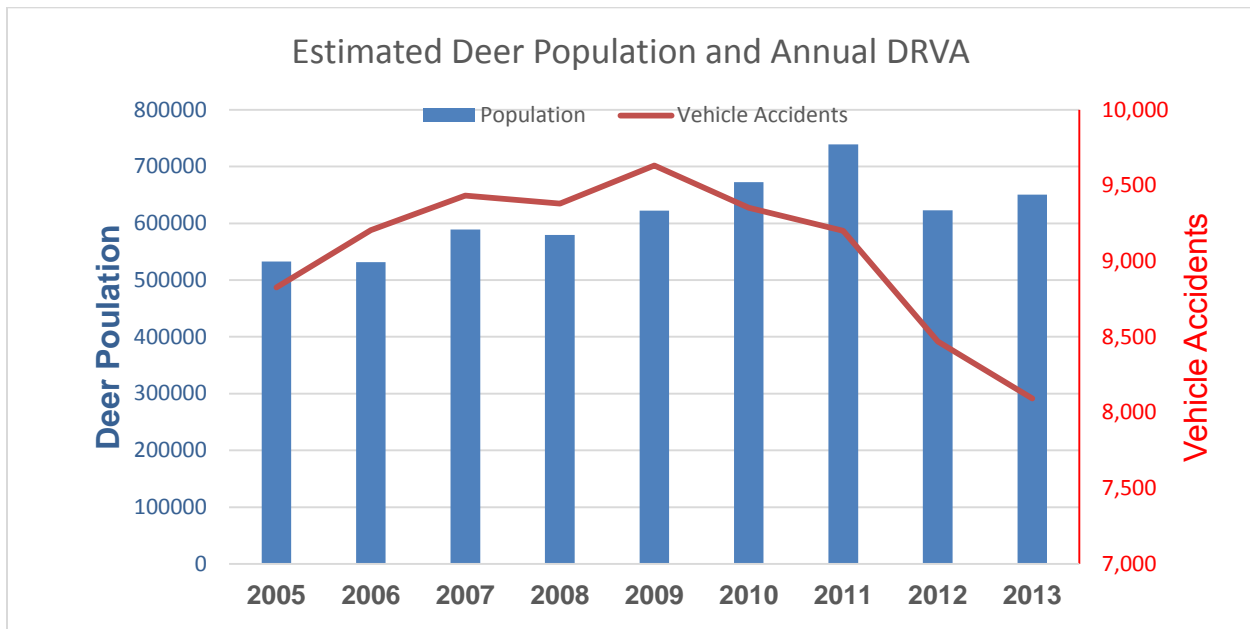
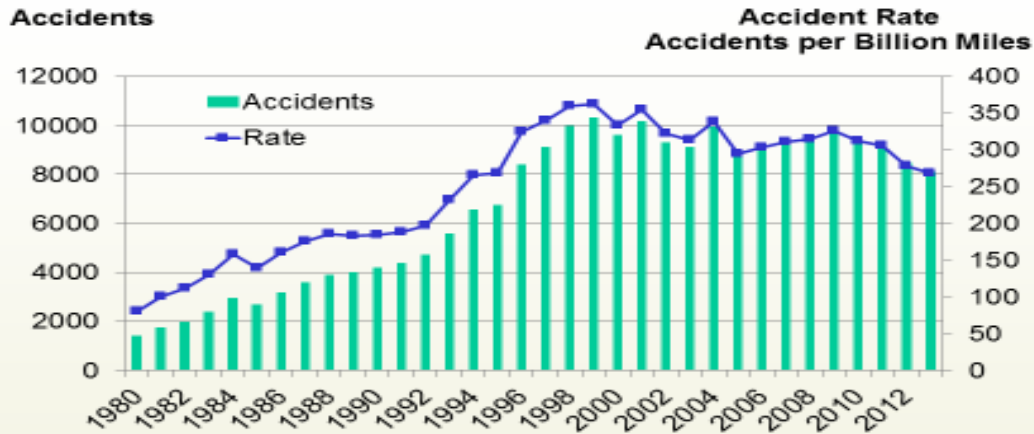
II. Historical Harvest



III. Population Estimate/Trends

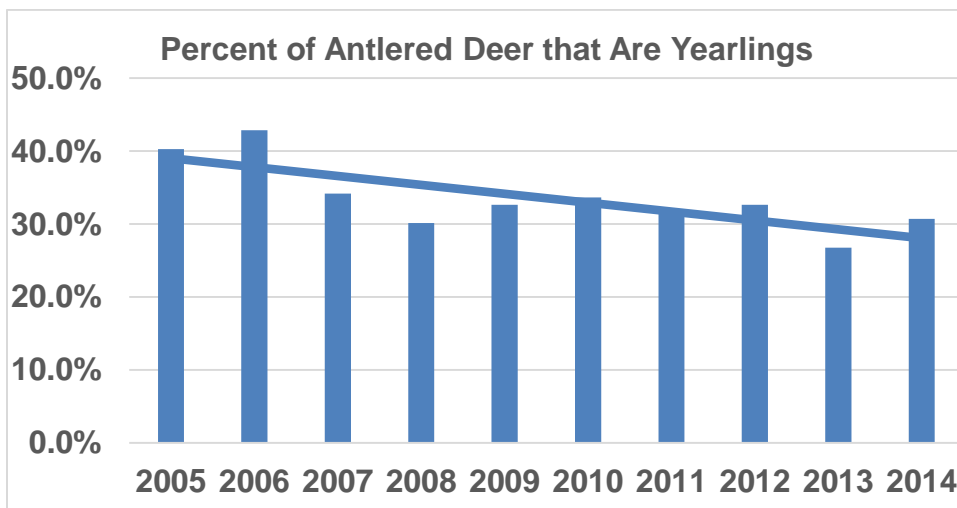
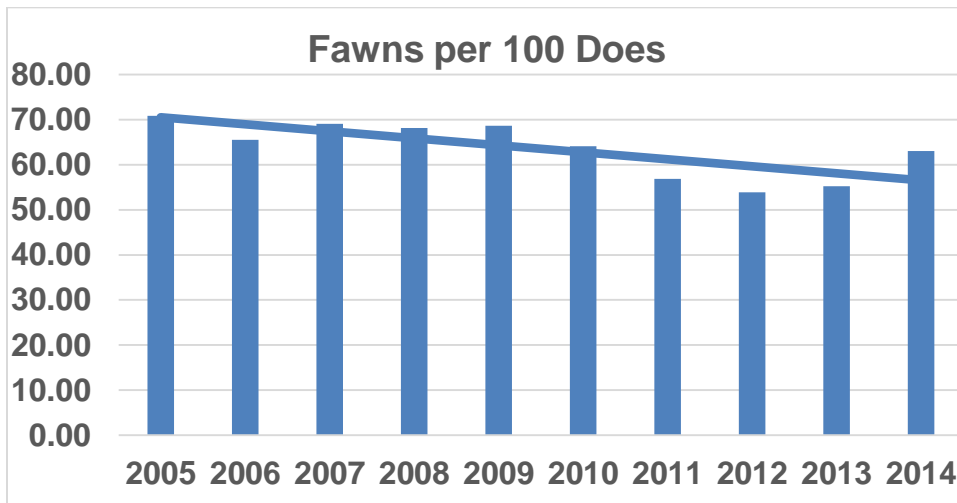
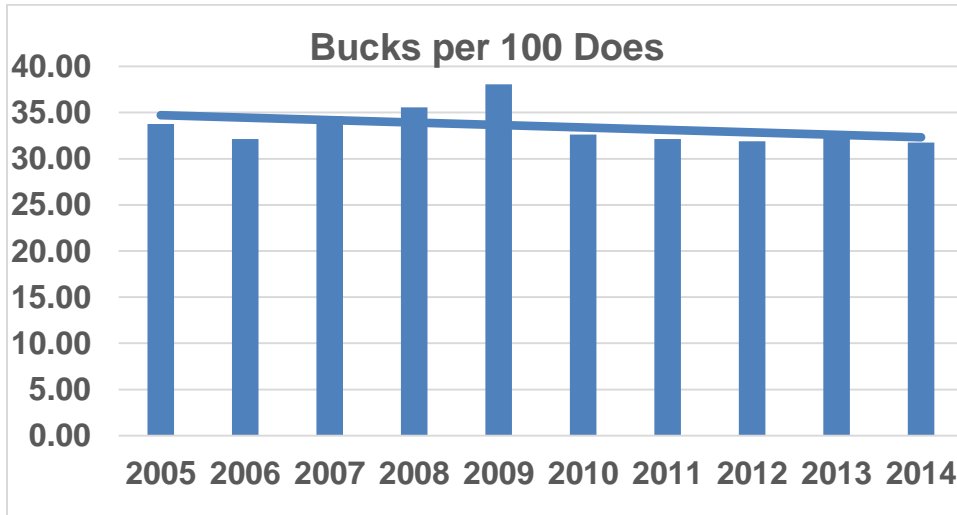
Population – Deer related vehicle accidents have provided a long term deer population trend indicator in Kansas. We use both the number of accidents per year and also the accidents per billion mile of traffic. In the early 2000s we initiated line transect and distance sampling procedures to assist in the monitoring of population trend. The two methods gave similar trends from 2005 through 2010, however since then accidents have declined more rapidly than our estimate of deer abundance obtained from distance sampling procedures.

Deer Related Accidents and Accidents per Billion Miles of Travel in Kansas.



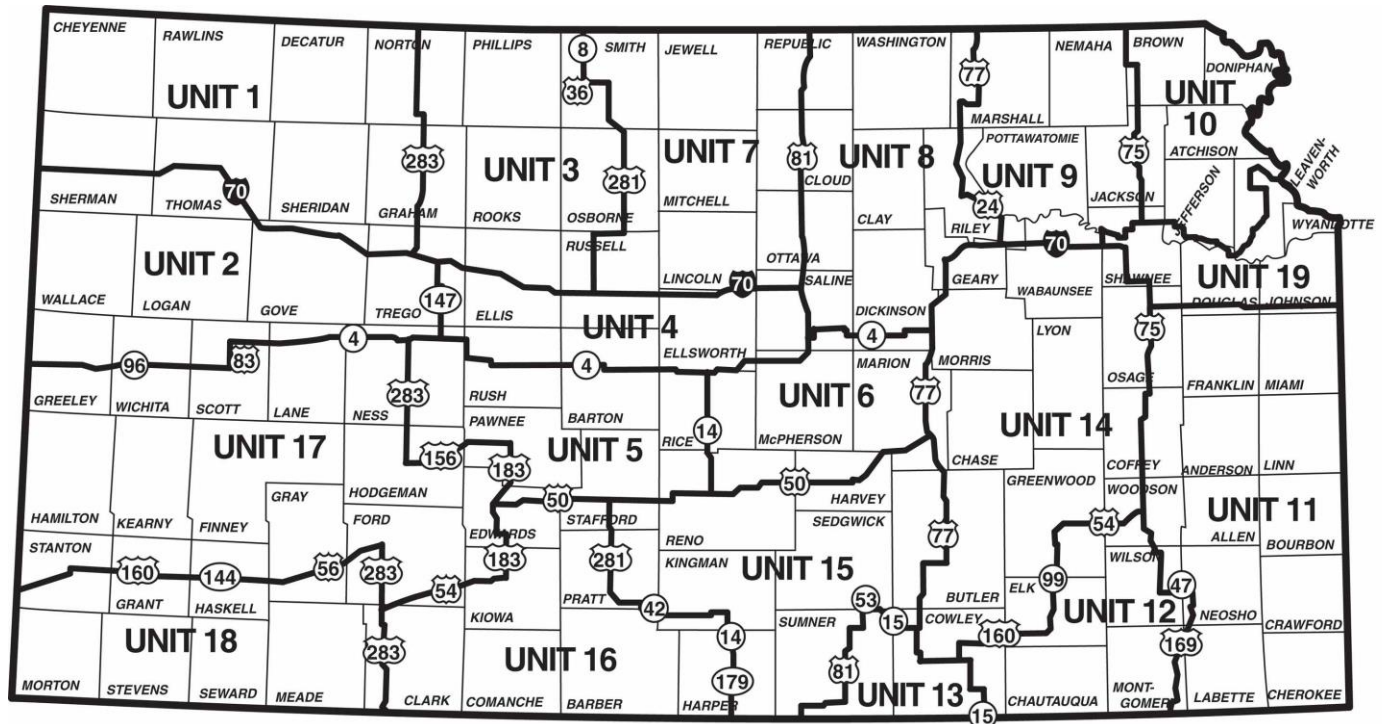
III. Population Estimate/Trends (cont'd)

Demographics – Historically we monitor age structure from a sample of teeth mailed to the department by hunters. Changes in USPS procedures prohibits that technique. As a result we switched to observations made by KDWPT employees during spotlight surveys. Since 2005 we have been able to classify about 4,500 deer per year. Approximately 33 antlered bucks and 62 fawns have been observed per 100 adult does. Approximately a third of the antlered deer have been estimated to be yearlings, however the portion of yearlings in the populations appears to be declining through the years.



IV. Deer Management Units:

The Kansas Department of Wildlife Parks and Tourism (KDWPT) manages deer at the level of Deer Management Units (DMU). Population trends, harvest and human dimensions aspects to deer management are summarized by these units. Boundaries are established by major state and federal highways easily identified and located by hunters, while the shapes are intended to capture areas of similar physiographic and ecological values. No attempt has been made to align DMU with political or administrative areas. Long term maintenance of unit boundaries is desired for trend analysis.



V. Regulation/legislation

2013-2014 Season

1. Non-resident deer hunters in the limited quota drawings were required to purchase an additional white-tailed deer antlerless-only permit. However, the price of the required WAO was set at \$15 (the same cost a resident would pay) instead of the \$50 former charged when the permit was optional. Non-residents purchased only 6,458 of the WAO permits and killed 3,137 deer on them in 2012, whereas they purchased 24,835 permits and killed 7,448 deer on them in 2013.
2. A 2-day firearm season for antlerless white-tailed deer was created in mid-October. This pre-rut season was open statewide and replaced a previous antlerless-only firearm season that occurred in just urban areas.
3. Archers were allowed to continue either sex hunting during the pre-rut firearm season. They were required to wear blaze orange during that time periods as well as during any other period of the archer season when a firearm or muzzleloader season was concurrently open.

- Firearms hunters were allowed to use any centerfire rifle during 2013 whereas a regulation had required them to use only rifles as large or larger than the Winchester 243 in the past.

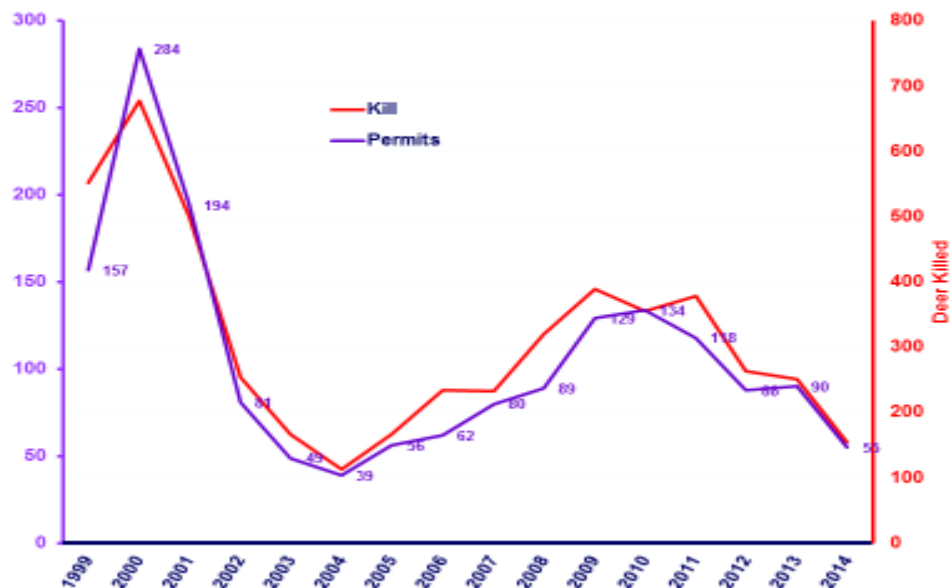
VI. Urban/Special Hunts

Special permits have been issued to municipalities (including parks in suburban areas and airports) to allow culling in areas where local deer abundance created safety or public intolerance of the deer and traditional hunting by citizens had been prohibited by local ordinances. KDWPT continues to create and expand special hunts to encourage the harvest of deer or to provide special access for youth, veterans and individuals with disabilities. Special hunts are being used to create some areas where limited entry will create low hunter densities to emphasize the experience, while in other situations they are being used to emphasize the need to remove additional antlerless deer.

VII. Deer Management Assistance/Crop Damage

KDWPT District Wildlife Biologists and Natural Resource Officers have been authorized since 1999 to issue Deer Control Permits (DCP) to landowners suffering from damage caused by deer. DCP allow landowners and up to two resident agents to kill deer outside the dates of traditional hunting seasons. They allow the use of techniques typically not allowed where fair chase is a goal. The issuing employee reviews each site and confirms damage caused by deer. They specify conditions and times when the permit may be used.

Trends in Use of Deer Control Permits in Kansas



VIII. Diseases

Following two years with unusually high number of reported cases of EHD (2011 and 2012) we initiated a program to encourage the public to assist KDWPT field employees in detecting sick or recently dead deer. The system allows people to report sightings of sick or dead deer at our website. This was done to promote the collection of samples usable for viral isolation testing. However, only 4 specimens were collected in 2013 and only 3 specimens have been collected in 2014. Viral isolation conducted at SCWDS was successful in finding EHDV-2 from only one deer submitted in 2013 from Atchison County. As of the time of this report, no HD deer have been encountered so far during 2014. Despite a lack of supporting evidence there is a prevailing notion among some deer hunters that HD is still an ongoing and severe problem. These notions are frequently intertwined with the individual's desire to reduce the number of non-resident deer hunters and or the harvest of antlerless deer.

Monitoring deer populations for chronic wasting disease is currently funded through Pittman/Robertson Act (W39 R019 Subproject 8115). The level of funding is less than we had used from 2003-2011 under USDA grants. As a result we sample hunter harvested deer from only one of five regions of the state each year. Sampling is rotate to a different region each year. In 2013 we focused on the eastern portion of the state. In addition to the hunter harvested deer we collected samples from selected vehicle killed deer, and all elk killed in the state. The sampling protocol included testing of all suspect deer. We also collected information on deer from hunters who paid for private testing.

KDWPT collects approximately 400 samples during the hunting season on a rotational basis from one of five regions of the state each year. During 2013 the sample region was eastern Kansas and CWD was not detected during that monitoring. Targeted surveillance continues to occur throughout the rest of the state. CWD suspect sick deer are tested regardless of their location or time of year. CWD was detected from 9 of 20 CWD suspect or vehicle killed deer from the northwest region of the state during 2013. Since 1996 KDWPT has tested 24,251 deer and elk. The first positive CWD case was detected in 2001 by USDA. There have been 64 CWD positive animals confirmed in Kansas.

IX. Research

No research projects emphasizing deer management are planned.

Deer Hunter Surveys

Deer hunter harvest surveys are conducted annually to determine harvest, success rates, activity days and participation during various seasons. It is used to determine deer hunter use and hunter harvest on public hunting areas and the Walk-In-Hunting-Area program. This survey is used to gather opinion information from deer hunters and as measure of hunters' season satisfaction, and to survey hunter opinions on various hot-button topics that may come before the Commission for regulatory review.

X. Hot Topics

Baiting

Baiting was banned on wildlife areas and Walk-In-Hunting-Areas managed by KDWPT in 2013. Baiting continues to be legal on private property in Kansas.

Equipment

Regulation of equipment continues to be a hot topic in Kansas. Crossbows were allowed as archery equipment during 2012. The remove of size restrictions on rifles also caused much discussion. We had asked about the types of equipment used by hunters in past harvest surveys. We estimated that 2.6% of the firearms hunters used calibers of rifles smaller than the 243 during the 2013 seasons. The change in the regulation did not appear to encourage additional youth or female hunters to take up deer hunting. The use of small caliber firearms was not disproportionately selected by young hunters or females.

XI. Relevant Links

KDWPT Regulations are available on-line at:

<http://kdwpt.state.ks.us/news/Hunting/Hunting-Regulations>

General information on deer management may be located at:

<http://kdwpt.state.ks.us/news/Hunting/Big-Game-Information>

Chronic wasting disease information and maps may be found at:

<http://kdwpt.state.ks.us/news/Hunting/Big-Game-Information/Chronic-Wasting-Disease>

2013-2014 Kentucky Department of Fish and Wildlife Resources White-tailed Deer Report



Photo courtesy of Joe Lacefield, KDFWR Private Lands Biologist



Kentucky Department of Fish and Wildlife Resources

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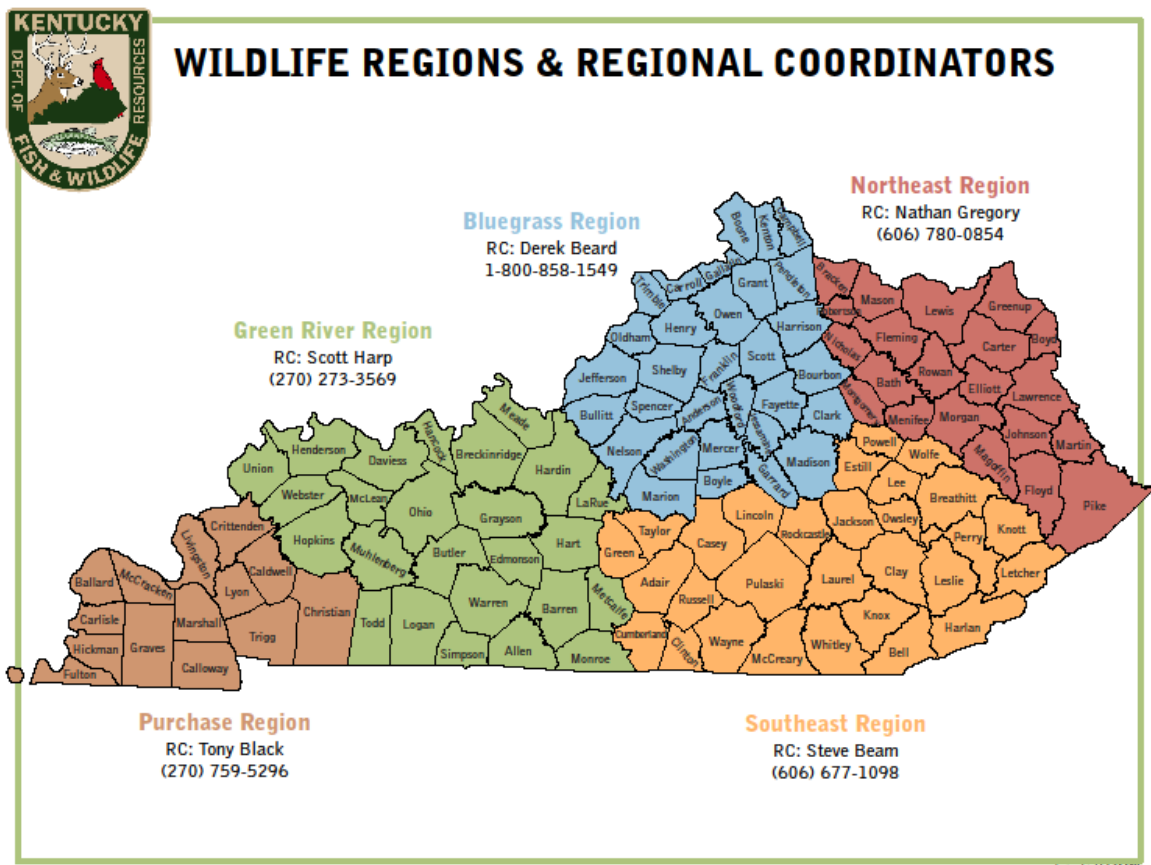
Introduction

The Deer Program is administered under the Wildlife Division of Kentucky Department of Fish and Wildlife Resources (KDFWR). The KDFWR is an agency of the Kentucky Tourism, Arts & Heritage Cabinet. It is overseen by a nine-member commission who are nominated by Kentucky's sportsmen and sportswomen. Commission members are appointed by the Governor. The department employs about 450 full-time staff, which includes conservation officers, wildlife and fisheries biologists, conservation educators, and information and technology, public relations, and customer service and administrative professionals.

KDFWR receives no money from the state's General Fund. Funding is provided by the sale of hunting and fishing licensees, boating registration fees and federal funds, including grants based on the number of licenses sold in the state.

The Deer Program is tasked with managing the white-tail deer herd in the state to provide ample hunting opportunity while balancing the needs of consumptive and non-consumptive user groups. The Deer Program is made up of 1 program coordinator, currently vacant, and two biologists, Gabe Jenkins and David Yancy. The Deer Program staff is based out of the headquarters office in Frankfort.

The Wildlife Division is broken up into 5 wildlife regions across the state. For reporting purposes all information in this report will be discussed using the 5 regions or at the specific county level.



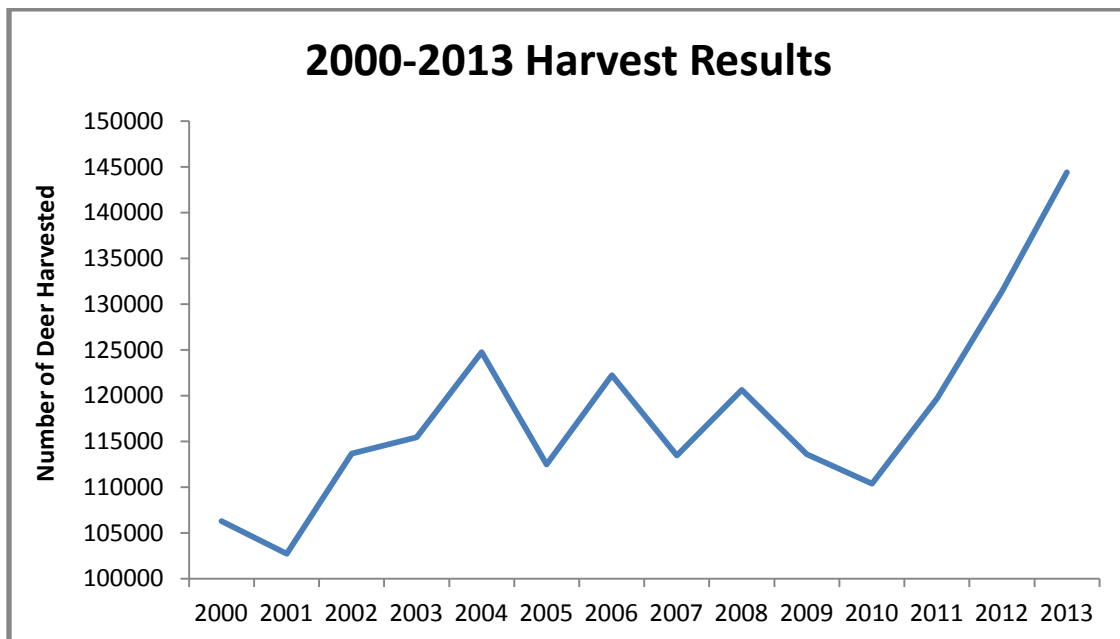
Population Status

Over the last decade deer management techniques have varied greatly across the state. Parts of the state such as the Bluegrass and Purchase regions have seen liberalization to the bag limit in an attempt to lower the deer population. Areas in the Southeast and Green River regions have seen a reduction in bag limits to accommodate for declining deer densities. In 2007, the state experienced the most wide spread Epizootic Hemorrhagic Disease (EHD) outbreak on record. All regions of the state were impacted, with some seemingly affected worse than others. Post the 2007 outbreak, deer hunting zones were restricted in some counties to reduce harvest in order to allow the herd to rebound. Current county population estimates in the counties that had their zone changed have rebounded and are at population levels equal to or higher than levels prior to the outbreak.

The overall herd estimate shows a stable to slightly decreasing trend. The current statewide estimate is 821,731 deer statewide, post 2013 hunting season, which is a 4% decrease from 2012. The estimate is generated from harvest and age structure data. Age structure data is collected by KDFWR staff and telecheck records are used for harvest data in the model.

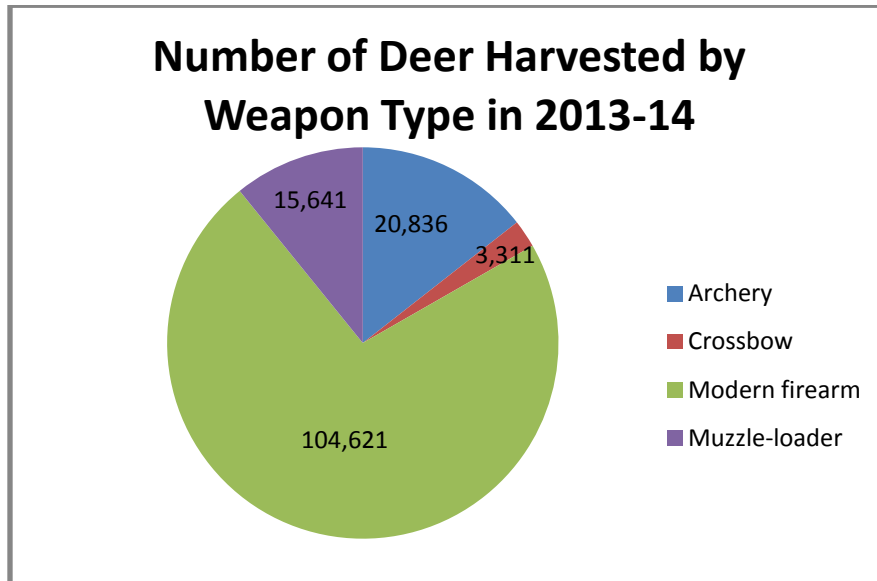
2013-2014 Harvest Results

The 2013-14 deer harvest was one for the ages with a record harvest of 144,409. It was the highest on record, beating the current harvest record (131,395 in 2013) by 13,000 deer. It was a 10% increase from 2012-13 season and was a 20.7% increase from the 2010-11 season. Factors that contributed to the increased harvest were a poor acorn crop, an increase of approximately 9,000 deer permits, and optimal hunting weather during the major hunting timeframes.



Weapon Type Harvest Summary

There were no major changes in the percentage of the harvest by weapon type compared to last season. Seventy-two percent of the overall harvest was taken during the modern firearm season. The increased harvest was reflected in all weapon types equally across the season.

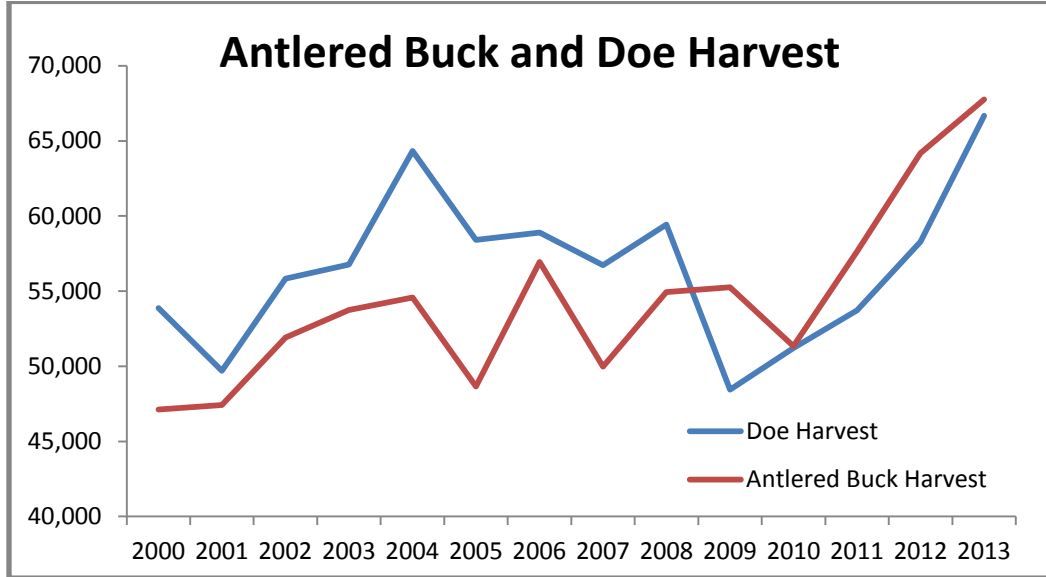


By weapon type, crossbow hunters saw the biggest percentage change, with a 33% increase in the crossbow harvest. Crossbow harvest has been increasing steadily over the last few years, indicating greater acceptance of using crossbows for deer hunting.

Weapon Type	Female	Male	Total	% Change
Archery	13,058	7,778	20,836	11%
Crossbow	2071	1240	3,311	33%
Modern firearm	42,171	62,450	104,621	9%
Muzzle-loader	9,388	6,253	15,641	7%
Total	66,688	77,721	144,409	10%

Hunters appear to have a limit on the number of deer they are willing or able to harvest. The majority of successful deer hunters (81%) only harvest one deer. Of the total successful hunters in the 2013-14 season (106,225 hunters) the average hunter harvested 1.4 deer. The 1.4 deer harvested per successful hunter was a slight increase from last season, however this rate usually does not fluctuate between deer zone and the season year.

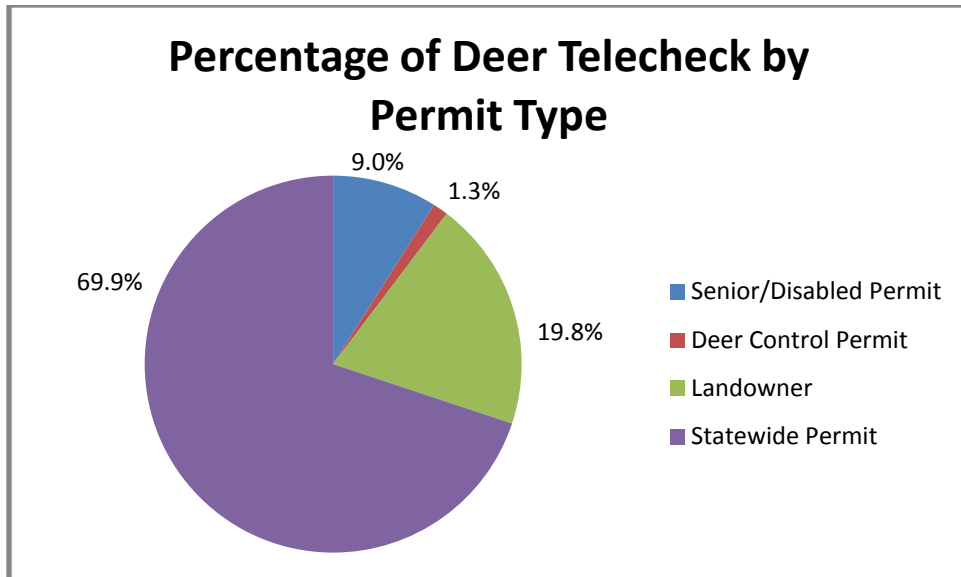
Even though the average hunter only harvests 1.4 deer, the successful hunters do an excellent job balancing the buck to doe numbers in the harvest. Doe harvest numbers can fluctuate greatly in a county or region due to harvest restrictions by zones.



Monthly Harvest Rates

September and November both saw record harvests of 5,838 and 105,667 respectively. This is the third year in a row that the September harvest was a record and second year in a row for November. Cooler conditions in September and optimal weather conditions for the modern gun season in November drove the record harvest. October’s harvest was up from 15,465 in 2012 to 17,553 in 2013. January’s conditions were cold and harsh, but the month still had the 3rd highest harvest on record at 2,455.

Harvest Results by Permit Type



Boone and Crockett Entries

A total of 54 record book entries (34 typical and 20 non-typical) were submitted to KDFWR in 2013. The 53 entries came from 41 of Kentucky's 120 counties. All regions of the state were represented with the highest number (3) coming from Lewis and Casey Counties.

Typical Score	Name	County	Equipment
184 5/8	Kenneth K. Zimmerman	Casey	Modern gun
183	James Irvine	Pulaski	Muzzleloader
181 1/8	Greg Reinhardt	Bracken	Modern gun
179 3/8	Jean L. Marquis	Oldham	Modern gun
176 5/8	Amanda Hombirg	Scott	Muzzleloader
172 7/8	Sarah Fitzpatrick	Lincoln	Modern gun
172 3/4	Jeff A. Osborne	Owen	Modern gun
172 5/8	Gabe Jenkins	Crittenden	Modern gun
172 1/8	Jason Burkley	Jessamine	Archery
170 3/4	Vernon Shuler	Mason	Modern gun
170	Nicholas Brown	Campbell	Archery
169 1/4	Bradley J. Mills	Ohio	Archery
168	Steven A. Howard	Lewis	Modern gun
167 1/8	Roy Jones	Clinton	Modern gun
166 3/4	Joshua Johnson	Casey	Modern gun
166 1/2	Oakley C. Allen	Lee	Archery
165 7/8	Terry Haney	Trigg	Modern gun
165	Aaron G. Jones	Shelby	Modern gun
164 3/4	Anthony Bright	Taylor	Modern gun
164 3/8	Jason Stanford	Shelby	Archery
164 1/8	Joe Dan Thompson	Casey	Archery
163 3/4	Dave Delaney	Logan	Modern gun
163 1/2	Robbie Ammons	Hardin	Archery
163 3/8	Johnathon E. Cox	Greenup	Modern gun
162 3/4	Tommy Stewart	Fulton	Modern gun
162 3/8	Keith Baker	Henry	Modern gun
162 1/8	Daniel Gardner	Campbell	Modern gun
161 7/8	Nick De Wet	Bath	Modern gun
161	Timothy Brock	Boone	Archery
160 3/4	Chris Cook	Pulaski	Modern gun
160 3/8	Eli Brock	Trimble	Found
160 3/8	Rodney J. Young	Franklin	Modern gun
160 1/4	Billy Young	Ohio	Modern gun
160 1/8	Tyler Fulton	Lyon	Archery

Non-typical Score	Name	County	Equipment
223 1/4	Phillip K. Robertson	Todd	Modern gun
221 7/8	David Howard	Todd	Archery
219 7/8	Junior Key	Monroe	Modern gun
217 1/8	Gerald Jenkins	Warren	Modern gun
215 1/2	Larry Mangin	Meade	Modern gun
210 1/2	Danny Moore	Bullitt	Modern gun
198 3/4	Albert L. King, Jr.	Henderson	Muzzleloader
198 5/8	Christopher Y. Graves	Fleming	Modern gun
195 3/4	Dennis Nickell	Fleming	Modern gun
195 1/8	Mark Hounshell	Lewis	Modern gun
193 1/8	Keith Major	Hardin	Modern gun
192 3/8	Steve Nix	Crittenden	Modern gun
191 3/4	Mary Lou Pollett	Jefferson	Found
189 3/8	Bradford L. Southwood	Wayne	Archery
188 5/8	Roger Poe Jr.	Robertson	Muzzleloader
188	Dustin R. Shaffer	Carter	Modern gun
186 1/8	Chad A. Clark	Lewis	Modern gun
185 5/8	John T. Wilson	Christian	Modern gun
185 3/8	Leslie Hull	Mason	Modern gun
185 3/8	Richard L. West	Butler	Muzzleloader

The submission of 54 entries ranks as the 5th best year on record for the state. 2011 was the best year ever with 78 entries. In 2011, Kentucky had the most record book entries than any other state. Below are the top 10 years for Boone and Crockett entries for the state.

Rank	Entries	Year	Rank	Entries	Year
1	78	2011	6	49	2006
2	57	2010	7	47	2009
3	56	2004	8	47	2007
4	56	2003	9	43	2000
5	54	2013	10	42	2012

Quota Hunt Results

There are 31 KDFWR quota hunts in the state along with 3 quota hunts on military installations (Ft. Knox, Bluegrass Army Depot, and Ft. Campbell). Any resident or nonresident hunter may apply for a deer quota hunt in the state. Only the persons successfully drawn for quota hunts may hunt. The application period for KDFWR deer quota hunts is the month of September. Applicants can apply online at fw.ky.gov or call 1-877-598-2401. Applicants will be given the option to pick a first and second hunt choice, but may be drawn to participate in only one quota hunt. The non-refundable fee is \$3 per hunter to apply. Each hunter who applies correctly, but isn't selected, will receive a preference point that increases the odds of being drawn the next year. Unselected hunters who do not apply the following year will lose all previously credited preference points. Applicants are selected based on individual

preference points. Up to five people can apply together with one call. If any one of the group's Social Security numbers is drawn, the others in the group are automatically drawn, too.

For the 31 KDFWR quota hunts held in 2013, there were 3,982 spots available for quota hunts across the states. There are quota hunts for any resident or nonresident hunters, mobility impaired hunters, archery/crossbow hunters, and youth hunters. Some quota hunts are for antlerless deer, some areas have a 15 in minimum spread restriction on bucks and some quota hunts only allow 1 deer to be taken per hunt. Each of the five wildlife regions across the state have deer quotas. For the 2013 Report, quota hunts in the Southeast and Northeast Regions will be highlighted.

Southeast Region

The Southeast Region has 3 KDFWR areas that have quota hunts (Green River Lake WMA and State Park, Mill Creek WMA, and Beaver Creek WMA). Below is a summary of the quota hunts in the Bluegrass Region.

Green River Lake WMA and State Park- by Brian Gray, KDFWR Southeast Region Public Lands Biologist

During the first full weekend in November the KDFWR offer public opportunities for hunting whitetail deer with a firearm on the 20,000 acre Green River Lake WMA. Terrain varies from flat bottomlands interspersed with 1100 acres of crop fields and bottomland forest that range from thickets to mature hardwoods. The area adjacent to the lake is relatively steep and dominated by upland hardwoods. Good access to the WMA is provided by various county roads or by using a boat on the lake. The WMA has a 15 in outside antler restriction for all deer hunting, and the only gun hunting is during a 2-day quota hunt the first weekend of November. The WMA is open to archery hunting in conjunction with the statewide season (except quota hunt).

Two quota hunts are offered on Green River Lake WMA during November, one is open for everyone with up to 400 hunters drawn and the second is open only to mobility impaired hunters with 15 slots available on a 500 acre area; the mobility impaired hunt usually has more slots available than applicants. Generally about 330 people show up for the 2 hunts combined, though in 2013 only 286 hunters checked-in.

In cooperation with KDFWR, Green River Lake State Park also offers 2 archery only quota hunts in December. These hunts are the 2nd and 3rd weekends in December and are 4 day hunts which begin on Thursday. These hunts do not require a check-in but any deer harvested must be telechecked. Fifty-five slots are available for each hunt.

Hunt	Participants	Hours Hunted	Deer Seen	Bucks Seen	Deer Harvest
WMA	286	3396	1183	246	62
Mobility Impaired	10	117	83	10	1
State Park	no data	no data	no data	no data	19



Mill Creek WMA- by Becky Littleton, KDFWR Southeast Region Public Lands Biologist

The 13,009-acre Mill Creek WMA is located in Jackson County and is part of the Daniel Boone National Forest. The terrain is steep and mountainous with narrow ridge tops. The area is over 95% forested with 30 acres of wildlife openings that are maintained in grass and clover.

Mill Creek WMA is open under statewide archery season. Deer firearm season is restricted to a 2-day quota hunt offered during the first weekend of November. Hunters are limited to one deer of either sex during the quota hunt.

The 2013 Mill Creek quota deer hunt was held November 2-3, with 275 of the 351 drawn hunters (78%) checking in to hunt. Hunters reported a total of 3,015 hours hunted (11 hours/hunter) with 236 (35 antlered) deer seen. A total of 16 deer were harvested (3 antlered, 13 antlerless). Mill Creek WMA doesn't usually produce trophy deer, but we generally see something interesting every year.



Beaver Creek WMA- by Becky Littleton, KDFWR Southeast Region Public Lands Biologist

The 17,753-acre Beaver Creek WMA is located in northern McCreary County and is part of the Daniel Boone National Forest. The terrain is steep with narrow ridge tops surrounding the Beaver Creek Wilderness area. The area is over 90% forested with 150 acres of wildlife openings that are maintained in small grains and clover.

Beaver Creek WMA is open under statewide archery season. Deer firearm season is restricted to a 2-day quota hunt offered during the first weekend of November. From 2004 through 2012, the area was under Quality Deer Management (QDM) regulations, requiring a minimum outside antler spread of 15 in for all antlered deer harvested. This restriction was removed for the 2013 season. Because the deer density is below the desired level, harvest for the 2014 quota hunt will be limited to one antlered deer.

The 2013 Beaver Creek quota deer hunt was held November 2-3, with 254 of the 332 drawn hunters (77%) checking in to hunt. Hunters reported a total of 2,780 hours hunted (11 hours/hunter) with 218 (71 antlered) deer seen. A total of 27 deer were harvested (16 antlered, 11 antlerless). No deer with an outside antler spread of 15 in or more were harvested.



Northeast Region

The Northeast Region has 3 KDFWR managed areas that have quota hunts (Fishtrap Lake WMA, Clay WMA, and Paintsville Lake WMA). Below is a summary of the quota hunts in the Northeast Region.

Fishtrap Lake WMA- by Rick Maruro and Herbie Adams, KDFWR Northeast Region Public Lands Biologist and WMA Foreman.

The Fishtrap Lake WMA, located in Pike County in far eastern Kentucky, offers one of the most unique deer quota hunts in the state due to its extreme terrain and heavily forested habitat. Eighty-five percent of the 13,135 acre WMA is wooded, and elevation ranges from 749–1,989 ft. the topography is characterized by steep ridges, deep hollows, and narrow ridge-tops and bottomland along creeks. Portions of the WMA which were previously mined consist of rolling slopes, grass, and shrubland. Some managed wildlife openings also occur within creek bottoms.

The rugged and varied habitat of the WMA supports a deer herd which is both abundant (but not overly so) and of good quality. Approximately 30% of the hunters that participated in the annual quota hunt in recent years have harvested a deer (reference the following table). The harvest is typically comprised of about 50% antlered and 50% antlerless deer. Likewise, during the last five years 33% of the antlered bucks taken had antler spreads ≥ 15 in, including almost 50% of the antlered deer taken last year. Although antler restrictions are not in effect on Fishtrap

WMA, restricted gun hunting (limited to the quota hunt and statewide youth hunts) and challenging terrain allow a good proportion of bucks to reach older age classes. In fact, the success rate on Fishtrap for bucks with antler spreads ≥ 15 in is comparable to many WMAs with antler restrictions.

The Fishtrap Lake WMA quota hunt occurs annually the weekend before Thanksgiving. Any weapons legal for taking deer in Kentucky, including firearms, are legal. The limit is one deer, either sex, and all hunters must check in and out of the hunt. In recent years about 70% of the hunters that applied have been drawn for one of the 200 available openings for the hunt.

If you want to diversify your deer hunting experience on an area with both good deer numbers and quality, Fishtrap WMA should be a prime candidate to consider. Although many WMA gates will be opened for the hunt to improve access, it is a good idea for hunters wishing to challenge themselves by walking very far away from roads to be in good physical condition, and to have a good plan for getting their deer out (e.g. buddies, game cart, etc.) if successful.

Year	# Hunters	Deer Harvested	Antlered Deer Harvested	Deer Harvested > 15in spread	Deer Harvested per Hunter	Deer Seen per Hunter
2013	157	52	19	9	0.33	3.37
5 yr average	153	45	20	7	0.28	2.82

Clay WMA- by Nathan Gregory, KDFWR Northeast Region Coordinator

Clay WMA is approximately 7,387 acres located in Nicholas, Fleming and Bath Counties. The quota hunt is held on the first weekend of November with 167 people getting drawn for the hunt. The terrain is, mixed upland forest ranging in age from mid-succession to mature hardwoods, with rolling hills and some bottomlands along the Licking River. There are interspersed fields scattered throughout the WMA and subtracts. The counties encompassing Clay WMA are labeled as zone 2 for deer hunting, allowing individuals drawn for the quota hunt to harvest up to 4 deer. Only 1 harvested deer may be a buck and hunters are required to use statewide tags. Clay WMA has an abundance of deer, and this quota hunt allows a hunter to use all 4 tags. Beyond the 2 day quota hunt individuals are limited to 1 deer per day on the WMA.

In 2009 a herd health check was completed and confirmed that deer numbers needed to be reduced in order to maintain a balanced and healthy deer population. That same year a preference point system was introduced for the quota hunt and is still used today. For every female deer a person harvests during the quota hunt they receive a preference point which improves the hunter's chances of being drawn for quota hunts in future years.

In 2013 there were 56 deer harvested which was down from 80 deer harvested in 2012; these numbers usually fluctuate annually due to weather conditions during the hunt weekend. Fifty-four percent (30) of harvested deer were not antlered and 46% (26) were antlered, and of the 26 antlered deer harvested 19 individuals were 2.5 years or older.

Total Hunters Drawn	Total Hunters Checked In	Estimated Hunting Hours	Total Deer Observed	Overall Success Rate
167	137	1914	671	41%



Paintsville Lake WMA- by Rick Maruro and Rusty Hamilton, KDFWR Northeast Region Public Lands Biologist and WMA Foreman.

Paintsville Lake WMA is located in Johnson and Morgan Counties and consists of 11,221 acres (95% forested); giving hunters plenty of room to explore and roam. Since its inception in 1989 the Paintsville Lake WMA quota hunt has represented a good hunting opportunity because deer are abundant and in good condition. Many bucks on Paintsville Lake WMA survive to older age classes and the sex ratio of the herd is fairly balanced. This is due to limited gun hunting pressure on bucks (permitted only during the quota hunt and statewide youth hunts) which allows them to reach older ages, and to either sex hunting for all deer hunts on the WMA. During good mast years acorns and beechnuts are a prime food for deer in the fall, and wooded tracts producing these nuts are a good place for hunters to focus their attention. In poor mast years, deer activity in the fall will generally be centered on scattered food plots and wildlife openings in creek bottoms and upland flats. Accessing hunting areas by boat is a prime method to reach isolated portions of the WMA.

The Paintsville Lake WMA deer quota hunt occurs annually the first weekend in November. The limit for the hunt is two deer but no more than one may be antlered. Antlered deer must have an outside spread of 15 in or more to be legally taken. Hunters are required to check-in and out during the quota hunt. In recent years about 88% of the applicants have been successfully drawn for one of the 300 available openings. The following table summarizes hunter participation and success in the Paintsville quota hunt during the past five years:

Number of Hunters	Deer Harvested	Antlered Deer Harvested ¹	Deer Harvested per Hunter	Deer Seen per Hunter	Antlered Deer Seen per Hunter	Antlerless to Antlered Deer Ratio ²
236	36	9	0.15	2.95	0.62	3.61

¹All antlered deer harvested had 15 in+ outside antler spreads due to quota hunt regulations. ²Calculated from the number of deer reported seen by quota hunters during check-out.



Disease Surveillance

Hemorrhagic Disease (HD)

Hemorrhagic disease (HD), a vector-borne disease of white-tailed deer is caused by two related orbiviruses, epizootic hemorrhagic disease virus (EHDV) and bluetongue virus (BTV). Hemorrhagic disease viruses are considered the most important viral agents affecting deer populations in the United States. The virus is transmitted from animal to animal through the bite of an infected midge. These insects are active in the late summer and early fall. HD outbreaks are often associated with drought. Once there has been a hard freeze the midges die off for the winter, eliminating new cases of HD.

HD is reported in deer from at least a few counties nearly every year in Kentucky, although outbreaks can be considerably large and widespread. The 2007 outbreak of HD in wild deer was the most widespread outbreak reported in the past 30 years. Over 4,000 suspected cases were reported in Kentucky. When possible, KDFWR will test animals that have died of apparent EHD.

Five deer were clinically diagnosed as EHDV positive in 2013. Of those 5, 2 were from Woodford County, 2 from Butler County and 1 from Henderson County.

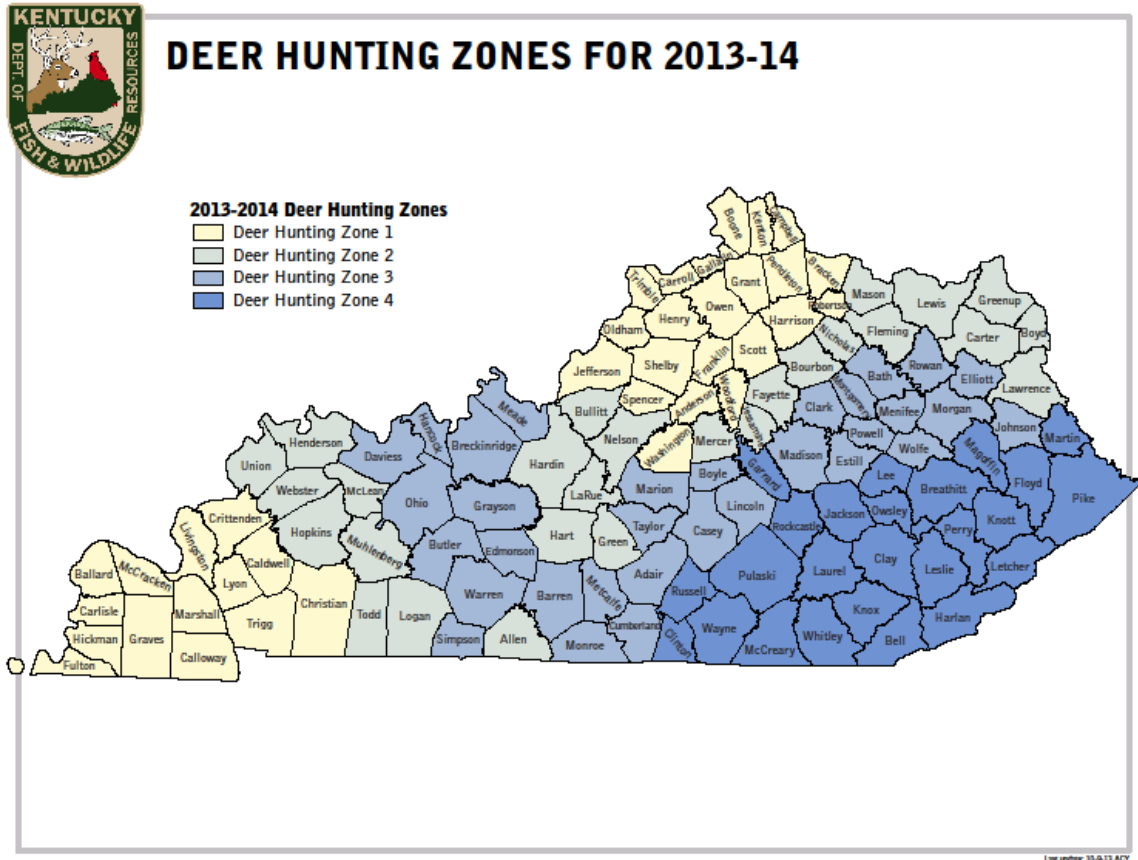
General Information about the 2013-14 Season

License and Permit Fees

License	Resident	Nonresident
Annual Hunting License	\$20	\$130
Senior/Disabled License	\$5	N/A
Sportsman's License	\$95	N/A
Jr. Sportsman's License	\$25	\$25
Statewide Deer Permit	\$30	\$60
Bonus Antlerless Permit	\$15	\$15
Jr. Deer Permit	\$10	\$10

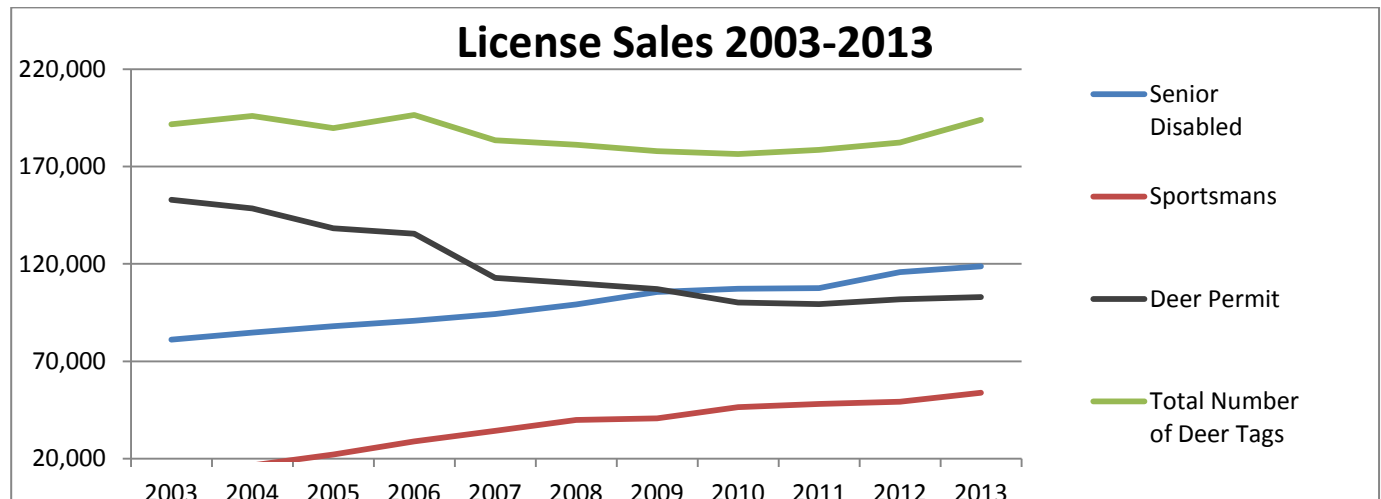
Season Dates

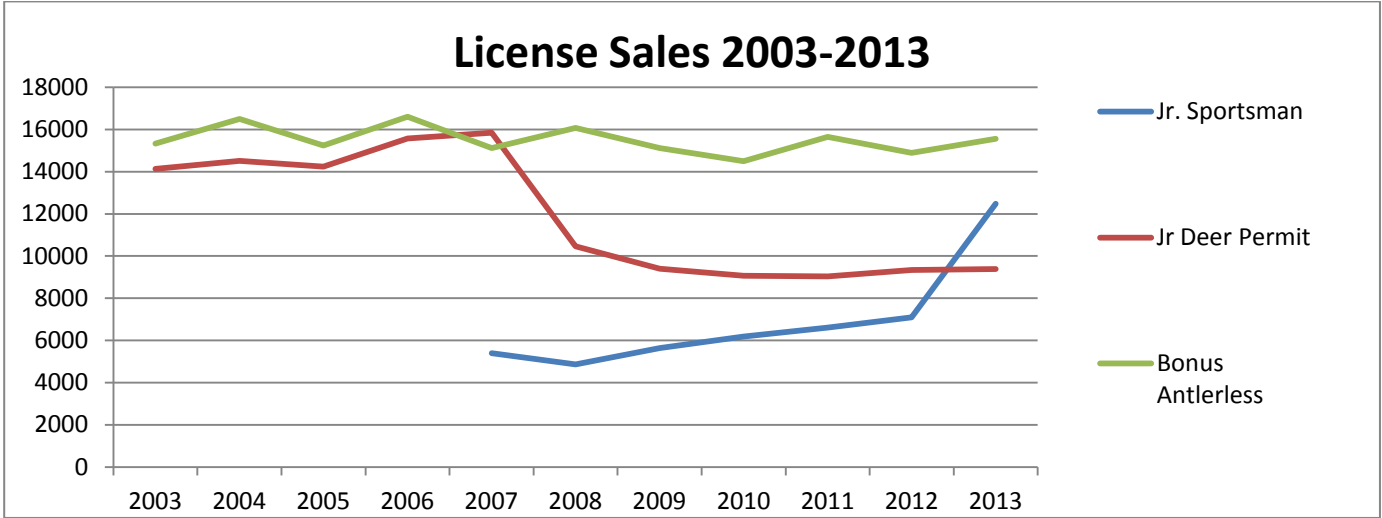
	Statewide	Zone 1	Zone 2	Zone 3	Zone 4
Modern Firearm		Nov 09-24	Nov 09-24	Nov 09-18	Nov 09-18
Archery		Sept 7- Jan 20	Sept 7- Jan 20	Sept 7- Jan 20	Sept 7- Jan 20
Early Crossbow		Oct 1-20	Oct 1-20	Oct 1-20	Oct 1-20
Late Crossbow		Nov 09-Dec 31	Nov 09-Dec 31	Nov 09-Dec 31	Nov 09-Dec 31
Early Muzzleloader		Oct 19-20	Oct 19-20	Oct 19-20	Oct 19-20
Late Muzzleloader		Dec 14-22	Dec 14-22	Dec 14-22	Dec 14-22
Youth-Only Firearms	Oct 12-13				
Free Youth Weekend	Dec 28-29				
Antlered Bag Limit	1				
Antlerless Bag Limit	Based upon zone	Unlimited	Up to 4	Up to 4, only 2 deer with a firearm	Up to 4. Only 2 deer with a firearm, antlerless deer can only be killed with a firearm during the last 3 days of the late muzzleloader



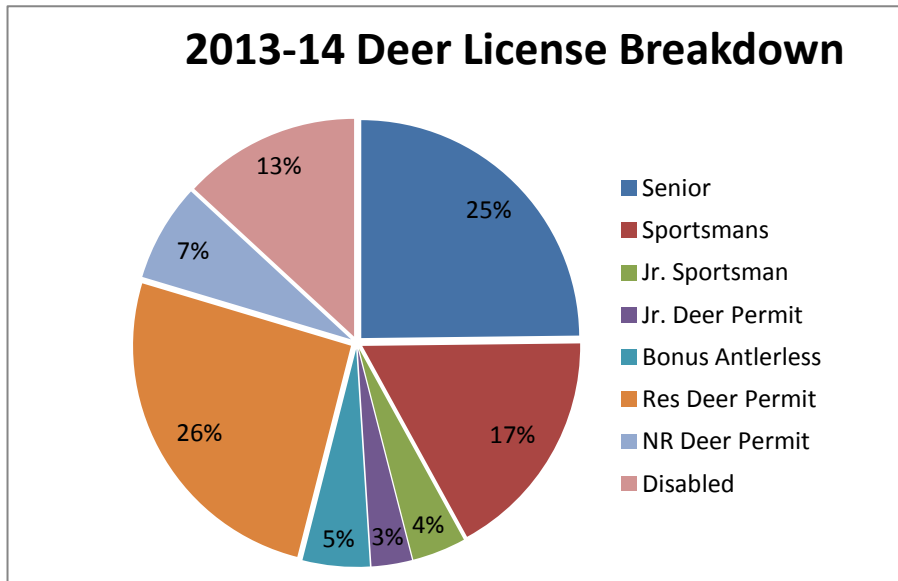
License Sales

In recent years the number of deer permits sold has declined slightly. When including the license bundles (Sportsman’s, Jr. Sportsman’s, Jr. Deer Permit, Resident and Non-Resident Deer Permit, and Bonus Antlerless Permit) in the total deer permit numbers a positive license sales growth is reported. Deer license sales increased by 6% from the 2012-13 season. KDFWR put an emphasis on Jr. Sportsman’s Licenses in 2013-14 and that effort was reflected in the overall sales of those licenses.





Upon further examining license sales, the majority of deer permits are purchased by resident deer hunters (26%), followed closely by Senior (25%) and Sportsman License (17%) buyers. Over the last few years there was a steady increase in the number of senior licenses sold and a slow decrease in resident deer permit sales. The overall number of deer hunters is stable to slightly increasing. However, the number of Senior licenses is increasing by nearly 3,000 yearly, indicating that a majority of Kentucky deer hunters are reaching the age of 65 (i.e., the age at which you can purchase as Senior License).



Current Research

Population Dynamics of Adult Female White-tailed Deer in Southeast Kentucky

Caleb Haymes, John Cox Ph.D., University of Kentucky,

Gabe Jenkins, Will Bowling, KDFWR

The white-tailed deer (*Odocoileus virginianus*) is a highly regarded game species throughout North America. Early in the 20th century, the deer population in the state of Kentucky was believed to number at 2600 individuals. After almost 90 years, 50 of which contained active restoration efforts, the deer herd now exceeds 750,000 individuals statewide. Although most of the state contains healthy numbers of deer, many counties in southeastern Kentucky are thought to have stable, low density populations.

Research will focus on adult does in Clay County, KY, in efforts to identify survival, cause-specific mortality, fecundity, and birth rate of this important reproductive demographic group in an area of relatively low deer density. Does will be captured and immobilized using clover traps, drop-nets, and free-range darting, then fitted with a very high frequency (VHF) radio-transmitter collar. Pregnancy and number of fetuses will be determined using an ultrasound, and a vaginal implant transmitter (VIT) will be inserted in pregnant does to facilitate location of birth-site locations and fawns for another research study (see below). Adult does will be monitored twice weekly for mortality for 18-24 months. These data should inform state wildlife managers about regional deer population dynamics in southeastern Kentucky, which will be helpful for the refinement of population models and overall management of this important game species.



Survival, Cause-Specific Mortality, and Recruitment of White-tailed Deer Neonates in Southeastern Kentucky

Joe McDermott, Dr. John Cox - University of Kentucky

Gabe Jenkins, Will Bowling - KDFWR

An extensive trapping and relocation project that ended in 1999 revealed that white-tailed deer populations in southeastern Kentucky were in decline while populations in the rest of the state were stable or increasing. Because the factors influencing this decline in southeastern Kentucky are unknown, the goal of this research project is to determine the recruitment rate, or the rate at which juveniles survive to adulthood and consequently become part of the breeding population, of deer populations through estimates of survival and cause-specific mortality of fawns. Understanding cause-specific mortality and survival of fawns is important when preparing deer population models that inform management decisions.

To address this regional deer issue we will capture and collar fawns during the months of May and June in Clay and Leslie Counties using vaginal implant transmitters (VITs). VITs are inserted into does captured during a complimentary mortality survey occurring in the same region (see above study). Fawns will also be found using thermal imaging cameras. Once captured, fawns will be fitted with an expandable neonate collar that will allow us to monitor the animals until death or one year of age.



These data will allow us to assess survival, cause-specific mortality, and recruitment. Our findings should help inform wildlife managers about regional deer population dynamics and potential management responses.

Changes for the 2014-2015 Deer Season

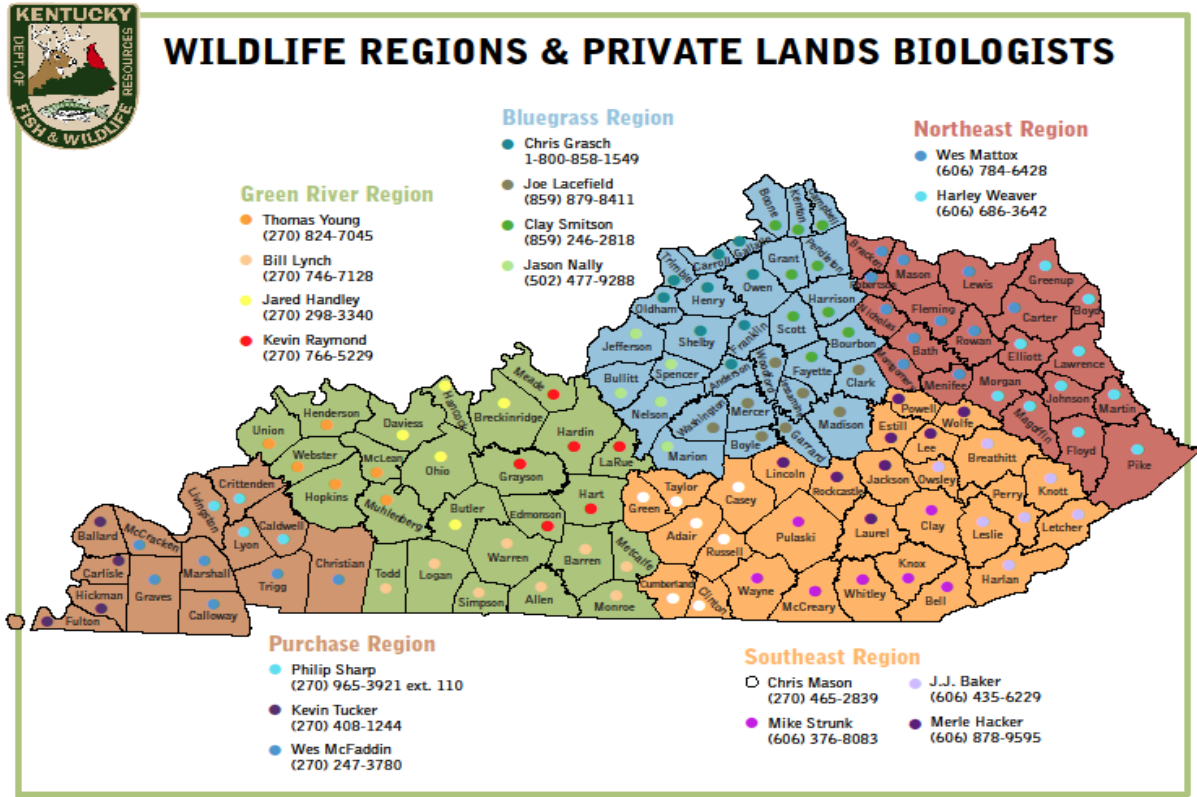
Menifee County will be changed from a zone 3 to a zone 4. Curtis Gates Lloyd WMA and John C. Williams WMA will be open for the youth only firearms season under statewide regulations. A quota firearms hunt will be held December 6-7 on Dewey Lake WMA and there will be a 1 deer limit during the quota hunt. The 15 in outside spread antler restriction has been removed from Yellowbank WMA and Paul Van Booven WMA. The modern gun quota hunt on Beaver Creek WMA will only be for antlered deer only. The quota hunt on Big Rivers WMA will start on the first Saturday in November.

Date changes only reflect the calendar shift from 2013 to 2014.

Contacts

Approximately 95% of Kentucky is privately owned. To successfully manage our wildlife resources, the KDFWR works cooperatively with Kentucky's private landowners. One of the essential ingredients in conserving Kentucky's wildlife resources is habitat improvement. Wildlife biologists are available to work with interested individuals or groups on properties that they own or have management rights on.

To contact your local wildlife biologist for assistance with wildlife management on your property see the map below.



The Department of Fish and Wildlife Resources is funded through the sale of hunting and fishing licenses. It receives no general fund tax dollars.



MICHIGAN DEER HARVEST SURVEY REPORT 2013 SEASONS

Brian J. Frawley

ABSTRACT

A survey of deer hunters was conducted following the 2013 hunting seasons to estimate hunter participation, harvest, and hunting effort. In 2013, an estimated 661,788 hunters spent 9.2 million days afield. Statewide, the number of people hunting increased significantly by 1% between 2012 and 2013. Hunters harvested about 385,000 deer. Harvest declined significantly by 8% from 2012. Statewide, 43% of hunters harvested a deer in 2013. About 22% of the hunters took an antlerless deer and 29% took an antlered buck in 2013. Approximately 13% of deer hunters harvested two or more deer of any type (two antlerless deer, two antlered bucks, or one of each). Less than 4% of hunters statewide harvested two antlered bucks. Levels of satisfaction with numbers of deer seen, bucks seen, deer taken, and overall deer hunting experience statewide declined significantly in 2013 from 2012. Statewide, 45% of hunters were satisfied with their overall hunting experience in 2013, and satisfaction was highest in the Lower Peninsula. About 162,728 hunters used a crossbow during the 2013 archery season, and they harvested approximately 58,772 deer with the crossbow. About 10% fewer individuals purchased a deer hunting license in 2013 than ten years ago in 2003. Although the overall number of license buyers declined from 2003, an increased number of people younger than 14 years of age and people older than 50 purchased a license in 2013. Nearly 12% of the license buyers in 2013 were younger than 17 years old.



A contribution of Federal Aid in Wildlife Restoration, Michigan Project W-147-R

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Division of Federal Assistance, U.S. Fish & Wildlife Service, 4401 North Fairfax Drive, Mail Stop MBSP-4020, Arlington, VA 22203.

For information or assistance on this publication, contact Michigan Department of Natural Resources, Wildlife Division, P.O. Box 30444, MI 48909.
This publication is available in alternative formats upon request.

INTRODUCTION

The Natural Resources Commission (NRC) and Michigan Department of Natural Resources (DNR) have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used to accomplish this statutory responsibility. Estimating hunter participation, harvest, and hunting effort (hereafter referred to as estimates) are the primary objectives of these surveys. Estimates derived from harvest surveys as well as information from deer harvest check stations, deer pellet group surveys, trends in deer-vehicle collisions, population modeling, and input received from the public are used to monitor deer populations and establish harvest regulations.

Estimating harvest, hunter numbers, and hunting effort were the primary objectives of the deer harvest survey. This survey also provided an opportunity to collect information about management issues. Questions were added to the questionnaire to investigate hunter satisfaction with the 2013 hunting season and deer numbers. Deer hunters were also asked whether they supported the antler point restrictions that were enacted in the Upper Peninsula (UP) and Deer Management Unit (DMU) 487 (northeast Lower Peninsula).

During 2013, white-tailed deer (*Odocoileus virginianus*) could be harvested primarily during the following hunting seasons: Liberty, archery, regular firearm, muzzleloader, early antlerless, late antlerless, and Independence. In order to harvest a deer, hunters had to possess a hunting license (firearm, archery, combination, antlerless, or mentored youth license) (Table 1).

A harvest tag was issued as part of the hunting license. Hunters could purchase a maximum of two licenses for taking antlered deer (one mentored youth, one combination license, or both a firearm and an archery license). Archery and firearm licenses included one harvest tag, while the mentored youth and combination licenses had two harvest tags. A firearm license allowed a person to take one deer with at least one antler three inches or longer, except in DMU 487 where it could also be used to take an antlerless deer in the firearm and muzzleloader seasons (Table 1). An archery license allowed an individual to take one deer of either sex. A person with a combination license could take two deer of either sex during the archery season, two antlered deer during the firearm season, or one antlered deer during each season, except in DMU 487 where it could also be used to take two antlerless deer in the firearm and muzzleloader seasons (Table 1). A person with a mentored youth license could use their two harvest tags to take two deer of either sex during the archery, firearm, or muzzleloader seasons. In addition, hunters with a mentored youth license could use one of their harvest tags to take one deer of either sex in the Liberty Season. If two antlered deer were taken, one needed to have at least one antler with four or more points (qualifying points must be at least one inch), except for deer taken by mentored youth hunters.

Antler point restrictions were adopted in 2008 for the taking of antlered deer (bucks) in the UP. Under this regulation, the regular buck tag of a combination deer license could only be used to tag a buck with at least three antler points on one side. The restricted tag could only be placed on a buck with a minimum of four points on one side. Hunters who chose not to

purchase the combination tag were restricted to one buck only (without any antler point restrictions) in the UP, all seasons combined, even if they purchased both archery and firearms licenses.

The same antler point restrictions that were adopted in the UP in 2008 were implemented in DMU 487 in the northeast Lower Peninsula (LP) in 2010. In addition, hunters in DMU 487 could use a firearm license or one or both combination license tags to take an antlerless deer during the firearm or muzzleloader seasons. Deer Management Unit 487 included Alcona, Alpena, Iosco, Montmorency, Oscoda, and Presque Isle counties.

Antlerless licenses could be purchased in addition to archery, firearm, mentored youth, or combination licenses. Antlerless deer licenses allowed hunters to take deer without antlers or with antlers shorter than three inches during any season with equipment appropriate for the season. Use of each antlerless license was restricted to a single DMU designated at the time of purchase. Antlerless licenses were available for most of the state, except in fifteen DMUs (017, 021, 027, 031, 036, 042, 048, 066, 117, 127, 131, 152, 249, 252, and 349) in the UP. A limited number of antlerless licenses were issued specifically for either public or private lands. Public land antlerless licenses were not available in all DMUs that had private land licenses. The number of licenses available in DMUs open to antlerless deer hunting was established by the NRC (Appendix A). Hunters could apply for an antlerless license through the drawing, purchase a private land license for selected areas without application, or wait to purchase a leftover license after the drawing, if available.

A private land antlerless deer hunting license was valid for taking antlerless deer only from privately-owned lands within the DMU specified on the license with landowner permission. A private land license was not valid on land enrolled in the Commercial Forest Act program (Commercial Forest Lands). Hunters were limited to a maximum of five private land antlerless deer licenses, except for DMU 487 where hunters were limited to ten private land licenses. In addition, there was no seasonal limit for the number of public land antlerless licenses that could be purchased. Furthermore, hunters could purchase two private land antlerless deer licenses each day, except for private land antlerless licenses for DMU 487 and public land antlerless licenses for DMU 452 where hunters could purchase five licenses each day.

Deer Management Unit 487 included private land in DMUs 001, 004, 035, 060, 068, 071, 135 and 452. A private land antlerless deer license for DMU 487 was valid on private land within any of the eight subunits.

A public land antlerless deer hunting license allowed an individual to hunt for antlerless deer upon publicly-owned lands (including state, federal, and county lands) open to hunting and Commercial Forest Lands within the DMU for which it was issued. A public land license was invalid on any privately-owned lands except Commercial Forest Lands.

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2010. Individuals could purchase an unlimited number of applications for the PMH. Three individuals were randomly chosen from all applications, and winners received

elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The antlerless deer hunting license was valid for all areas open for hunting antlerless deer and during all deer hunting seasons in which they were eligible to participate.

Deer Management Assistance (DMA) permits were special antlerless permits issued to landowners where the number of antlerless licenses was insufficient to meet the objective of specific landowners (e.g., controlling disease, crop damage, or deer abundance). These permits allowed hunters to take one antlerless deer per permit during any deer season on the land where issued or adjacent private lands with the landowner's permission. To use these permits, the hunter also must have purchased a valid deer hunting license for the season in which they were hunting and abide by all other hunting regulations.

Managed Deer Hunt permits were antlerless permits that could be used during special seasons on some public lands (e.g., state parks, state wildlife areas, and some federal land). These permits were issued by special random drawings. To use these permits, the hunter also must have purchased a valid deer hunting license and abide by all other hunting regulations.

The Liberty Season was held during September 21-22 on public and private lands statewide. Youth (less than 17 years old) and disabled hunters could take no more than one deer during the season. Eligible disabled hunters included hunters issued a permit to use a laser-sighting device or to hunt from a standing vehicle, veterans with 100% disability as defined by the United States Department of Veterans Affairs, or legally blind people could participate in this season. Hunters could take one deer of either sex using a firearm, mentored youth, or combination license. Only an antlerless deer could be taken with an antlerless license or DMA permit. Archery and junior archery deer licenses were not valid for this hunt. Youth less than 14 years of age could hunt with archery and crossbow equipment on public or private lands or with a firearm on private or Commercial Forest lands only. A public-land antlerless deer license was required to hunt antlerless deer on Commercial Forest land. All hunters under age 17 had to be accompanied by a parent, guardian or someone designated by their parent or guardian.

The archery season occurred statewide on public and private lands. This season was divided into early and late segments (October 1 through November 14 and December 1, 2013, through January 1, 2014). Archery licenses, antlerless licenses, combination licenses, mentored youth licenses, and DMA permits could be used to take deer during the archery seasons using archery equipment.

Deer could also be taken during the Independence Hunt October 17-20, 2014. Hunters could take one deer of either sex on private lands or public lands requiring an access permit. Only hunters that were issued a permit to use a laser-sighting device or to hunt from a standing vehicle; veterans with 100% disability as defined by the United States Department of Veterans Affairs; or legally blind people could participate in this season.

The statewide regular firearm season occurred November 15-30. The muzzleloader season was held December 6-15 in the UP, December 13-22 in the Northern LP, and December 6-22 in the Southern LP. Hunters were allowed to take deer on both public and private lands with mentored youth, firearm and combination deer hunting licenses during the regular firearm and muzzleloader seasons. Antlerless licenses (including DMA permits) also could be used during the firearm seasons.

The early antlerless firearm season occurred from September 21-22. Hunters pursuing deer during this season had to purchase an antlerless or mentored youth license, possess an unused antlerless harvest tag (including DMA permits), and were limited to hunting on private land. The area open to hunting during the early antlerless season was limited to all or portions of 50 counties in the LP (Alcona, Allegan, Alpena, Antrim, Arenac, Barry, Bay, Berrien, Branch, Calhoun, Cass, Charlevoix, Clinton, Eaton, Genesee, Gratiot, Hillsdale, Huron, Ingham, Ionia, Iosco, Isabella, Jackson, Kalamazoo, Kent, Lapeer, Lenawee, Livingston, Macomb, Mecosta, Midland, Monroe, Montcalm, Montmorency, Muskegon, Newaygo, Oakland, Oceana, Oscoda, Ottawa, Presque Isle, Saginaw, St. Clair, St. Joseph, Sanilac, Shiawassee, Tuscola, Van Buren, Washtenaw, and Wayne). The counties open in 2013 were the same as in 2012.

The late antlerless firearm season occurred from December 23, 2013, through January 1, 2014. Hunters pursuing deer during this season had to have purchased an antlerless or mentored youth license, possess an unused antlerless harvest tag (including DMA permits), and were limited to hunting on private land. All counties open during the early antlerless firearm season were also open for the late antlerless firearm season. The same counties open to hunting during the 2013 late antlerless season were open in 2012.

Crossbows were legal to use during all archery and firearm seasons statewide, except in the UP, where crossbow use was prohibited during the late archery and muzzleloader seasons, unless the hunter was disabled. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNR-issued crossbow permit, did not need the stamp.

METHODS

The Wildlife Division provided all hunters the option to report information about their deer hunting activity voluntarily via the internet. This option was advertised through the hunting regulation booklet (digest) and on the DNR website, and an email message was sent to all license buyers that had provided an email address to the DNR (98,143). Hunters reported whether they hunted, the days spent afield, and whether they harvested a deer. Deer hunters were also asked whether they supported the antler point restrictions in the UP and DMU 487. Following the 2013 deer hunting seasons, a questionnaire was sent to 55,537 randomly selected individuals who had purchased a hunting license (firearm, archery, antlerless, mentored youth, or combination deer hunting licenses) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire were asked the same questions as asked via the internet. Hunters were instructed not to

report hunting effort and harvest associated with DMA permits because landowners obtaining these permits already were required to report the number of deer harvested to the DNR.

Estimates were based primarily on information collected from random samples of hunting license buyers. Thus, these estimates were subject to sampling errors (Cochran 1977). Estimates were calculated using a stratified random sampling design (Cochran 1977) and were presented along with their 95% confidence limit (CL). In theory, this CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases.

License buyers were assigned to one of five groups (strata) based on the type of license purchased and season that it was valid. The first stratum consisted of people eligible only for the archery, regular firearm, and muzzleloader hunting seasons (N = 439,173). The second stratum consisted of people eligible to hunt during archery, regular firearm, muzzleloader, early antlerless, and late antlerless seasons (N = 208,866). The third stratum consisted of people eligible to hunt during archery, regular firearm, muzzleloader, late antlerless, and Liberty seasons (N = 56,931). The fourth stratum consisted of 3,662 people that were eligible to participate in the special disabled hunts. Beginning in 2013, disabled veterans could obtain a free deer hunting license (i.e., Disabled Veteran license type). A unique type of hunting license was not available for non-veteran hunters with disabilities; however, disabled hunters younger than 65 years were sold a discounted hunting license (i.e., sold a senior hunting license). The fifth stratum consisted of 3,772 people that had voluntarily reported information about their hunting activity via the Internet before the random sample was selected. The random sample consisted of 28,591 people from the first stratum; 13,469 from the second stratum; 11,714 from the third stratum; and 3,658 from the fourth stratum. The stratified sampling design accounted for the varying probabilities of being selected from the strata so estimates could be reliably extrapolated from the sample to all license buyers.

Estimates were calculated separately by the area where the hunt occurred. For consistency with previous surveys, the state was divided into eight areas that closely matched the DNR's previous wildlife management administrative units (Figure 1). The state was also divided into three ecological regions (UP, Northern LP, and Southern LP). These regions generally matched major ecoregions (Albert 1995), except in the UP where two ecoregions were combined. Ecoregions are regions having similar soils, vegetation, climate, geology, and physiography. Estimates were also calculated for each DMU (Figure 2, Appendix B). Deer harvested from unknown locations were allocated among areas in proportion to the known harvest.

Statistical tests are used routinely to determine the likelihood that the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping

95% confidence intervals were equivalent to stating that the difference between the means was larger than would be expected 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

Questionnaires were initially mailed during mid-January 2014, and two follow-up questionnaires were mailed to nonrespondents. To increase the number of questionnaires returned, respondents that returned their questionnaire promptly became eligible to win a firearm or bow. Although 55,537 people were sent the questionnaire, 1,260 surveys were undeliverable resulting in an adjusted sample size of 54,277. Questionnaires were returned by 27,834 people (51% response rate).

Estimates of harvest, hunting effort, and hunter participation are affected by the willingness of people to complete and return their questionnaires. This problem can confound comparisons of estimates made between years if response rates vary greatly. The percentage of people returning their questionnaire this year was lower than previous years. To reduce bias caused by this lower response rate, an adjustment was made on the 2013 estimates to make them comparable to the adjusted 2012 estimates (adjusted to a 74% response rate). Estimates of harvest, hunting effort, and hunter numbers were reduced by 6.2%, 4.5%, and 1.8%, respectively, to make estimates comparable to 2012. These reductions reflected the average decline noted between estimates calculated when 51% and 74% of the responses were used in 2000 and 2001 surveys.

RESULTS

In 2013, 712,404 people purchased a license to hunt deer in Michigan. The number of people buying a license in 2013 increased by nearly 2% from 2012 (701,001 people purchased a license in 2012). Most of the people buying a license were male (89%), and the average age of license buyers was 42 years (Figure 3). Nearly 12% (87,716) of the license buyers were younger than 17 years old. About 4% (26,821) of the license buyers were younger than 12 years old.

The number of people buying a license in 2013 was nearly 10% less than the number of people who purchased a license ten years ago in 2003 (787,951 people purchased a license in 2003). There were fewer license buyers for most age classes between 14 and 50 years of age in 2013, compared to 2003 (Figure 4). However, there were increased hunter numbers among the youngest and oldest age classes in 2013. The increased hunter numbers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased. In addition, legalization of crossbow use during the archery season probably increased participation among hunters in the oldest age classes. The increased participation among the youngest hunters likely reflected the lowering of the minimum age requirements. In 2012, the minimum age requirement was eliminated to hunt deer with a firearm, while hunters had to be at least 12 years old to participate in 2003.

The minimum age requirement to hunt deer has been lowered three times during recent years. In 2006, the minimum age for hunting deer with a firearm on private land was lowered

from age 14 to 12, and the minimum age for hunting deer with archery equipment on any land type was lowered from age 12 to 10. This change resulted in approximately 15,000 additional youth purchasing a deer hunting license per year starting in 2006 (Figure 5). In 2011, it was legal for 10 and 11 year olds to hunt deer on private land with either a firearm deer license or junior combination deer license. This change resulted in approximately 5,000 additional youth purchasing a deer hunting license per year starting in 2011. In 2012, youth less than 14 years of age could hunt with archery and crossbow equipment on public or private lands or with a firearm on private or Commercial Forest lands only. This change resulted in approximately 13,500 additional youth purchasing a deer hunting license in 2013. The cumulative effect of these 2006-2013 changes resulted in approximately 33,500 additional youth purchasing a deer hunting license in 2013.

The number of 2013 deer harvest tags sold for all license types combined increased slightly (0.7%) from 2012 (Table 2). License buyers were issued an average of 2.1 harvest tags. About 90% of the license buyers obtained three or fewer harvest tags, and about 99% had five or fewer harvest tags (Figure 6). Hunters most frequently obtained antlerless and combination harvest tags (Figure 7). About 42% of the license buyers purchased at least one antlerless license (302,050 people), and greater than 99% of antlerless license buyers purchased three or fewer antlerless licenses, public and private licenses combined (Figure 8).

The antlerless license quota on private lands decreased 24% from 637,900 in 2012 to 483,400 licenses in 2013 (Appendix A). The quota for public land antlerless licenses increased 2% from 69,350 to 70,574 between 2012 and 2013. The number of antlerless licenses sold declined nearly 2% between 2012 and 2013 (Table 2).

About $93.1 \pm 0.3\%$ (661,788 hunters) of the people buying a license in 2013 actually spent time hunting deer (Table 3). Most hunters (593,079) pursued deer during the regular firearm season (Figure 9). Statewide, the number of people hunting deer during all seasons combined was nearly 1% greater than hunter numbers in 2012.

A significantly greater number of people hunted during the early firearm (15%), regular firearm (2%), and archery (1%) seasons during 2013 (Table 3). Significantly fewer people hunted during the muzzleloader (-9%), late antlerless (-20%), and Liberty (-42%) seasons. The numbers of people hunting in the Independence season were nearly unchanged between 2012 and 2013 (Figure 10).

About 48% of the days hunters spent pursuing deer throughout the state occurred in the archery season (Figure 11). About 40% of the hunting effort occurred during the regular firearm season. Nearly 11% of the hunting effort occurred in the muzzleloader and late antlerless seasons combined. Statewide, hunters devoted an average of 15.2 days afield hunting deer during all seasons combined (Table 4). Archers had the greatest number of days available to hunt deer (77 days) and devoted the greatest number of days afield ($\bar{x} = 14.5$ days/hunter) (Figure 12, Table 4). For all seasons combined, hunting effort statewide was nearly unchanged between 2012 and 2013 (Table 3). Hunting effort increased significantly during the early firearm season (14%) but decreased significantly during the muzzleloader (-10%), late antlerless (-36%), and Liberty (-44%) seasons. Hunting effort was

unchanged during the archery, regular firearm, and Independence seasons between 2012 and 2013.

About 385,302 deer were harvested statewide in 2013, which was significantly lower (-8%) than in 2012 (Figures 13-14, Tables 5-6). Regional declines in harvest were greatest in the UP, where overall harvest declined by nearly 19%. Statewide harvest of antlerless deer declined nearly 8% in 2013, while harvest of antlered deer declined by nearly 9% from 2012 (Table 5). Between 2012 and 2013, harvest of antlered deer decreased significantly during the archery (8%), regular firearm (9%), and Liberty (33%) seasons, but was unchanged in other seasons. Harvest of antlerless deer decreased significantly in the late antlerless (36%) and Liberty (44%) seasons but was unchanged in other seasons.

About 54% of the deer harvested (sexes combined) in 2013 were taken during the regular firearm season (Figure 15). Nearly 45% of the antlerless deer and 62% of the antlered bucks were harvested in the regular firearm season. Hunters took 31% of the harvested deer (sexes combined) during archery season. These archers took 31% of the antlerless deer and 31% of the antlered bucks harvested. Few antlered bucks (4%) were taken in the muzzleloader season. The early and late antlerless and muzzleloader seasons combined accounted for about 20% of the antlerless deer harvested.

About 86% of the animals harvested (sexes combined) in 2013 were taken on private lands (Table 7). Statewide, most of the antlerless deer (87%) and antlered bucks (85%) were harvested on private lands. Some noteworthy changes between 2012 and 2013 included decreased harvest of deer on both public and private lands in the UP and decreased take of antlered deer in the northwest Lower Peninsula (NWLP). New antler-point restrictions were adopted in 2013 for harvest of antlered deer the NWLP (Frawley 2012), and these restrictions likely contributed to reduced take of antlered deer in the NWLP.

Statewide, 43% of deer hunters harvested at least one deer (all deer seasons and sexes combined) in 2013 (Figure 16, Table 8), compared to the 46% successful in 2012. About 22% of hunters took an antlerless deer, and 29% took an antlered buck in 2013. About 13% of deer hunters harvested two or more deer.

Hunters were most successful in taking a deer during the Liberty (40% successful), regular firearm (32%), and archery (31%) seasons (Figure 17, Table 9). Hunter success was lowest in the Independence (15%) and muzzleloader (16%) seasons. Nearly 21% of hunters took an antlered buck and 13% harvested an antlerless deer during the regular firearm season.

Deer hunters were asked to report how satisfied they were with (1) number of deer seen, (2) number of antlered deer [bucks] seen, (3) number of deer taken, and (4) their overall hunting experience. Statewide, $\leq 45\%$ of hunters were satisfied with numbers of deer seen, bucks seen, deer taken, and their overall hunting experience in 2013 (Tables 10-11). Statewide levels of satisfaction decreased for all measures between 2012 and 2013.

Statewide, about 53% of hunters supported the antler point restrictions on buck harvest implemented for the UP (Table 12), and about 59% of the hunters that preferred to hunt in the

UP supported the antler point restrictions. Statewide support for the restrictions did not change significantly between 2012 and 2013.

Statewide, about 45% of hunters supported the antler point restrictions on buck harvest implemented for the DMU 487 (Table 13), and about 51% of the hunters that preferred to hunt in the northeast LP supported the restrictions. Statewide support for the restrictions in DMU 487 was not significantly different; however, opposition increased significantly between 2012 and 2013 (increased from 18% to 20%).

About 162,728 hunters used a crossbow during the archery season, and they harvested about 58,772 deer with the crossbow (Tables 14-16). The number of archers using a crossbow increased 14% from 2012 (142,548 archers in 2012); however, harvest of deer by archers using a crossbow decreased 2% (59,771 deer taken in 2012). About 32% of these archers using a crossbow in 2013 harvested a deer with a crossbow. Hunters using a crossbow to hunt deer were required to obtain a crossbow stamp, and $58 \pm 1\%$ of the archers using a crossbow during the archery season had obtained this stamp in 2013. However, $76 \pm 1\%$ of the archers using a crossbow during the archery season in 2013 had obtained a crossbow stamp during at least one year during 2009-2013.

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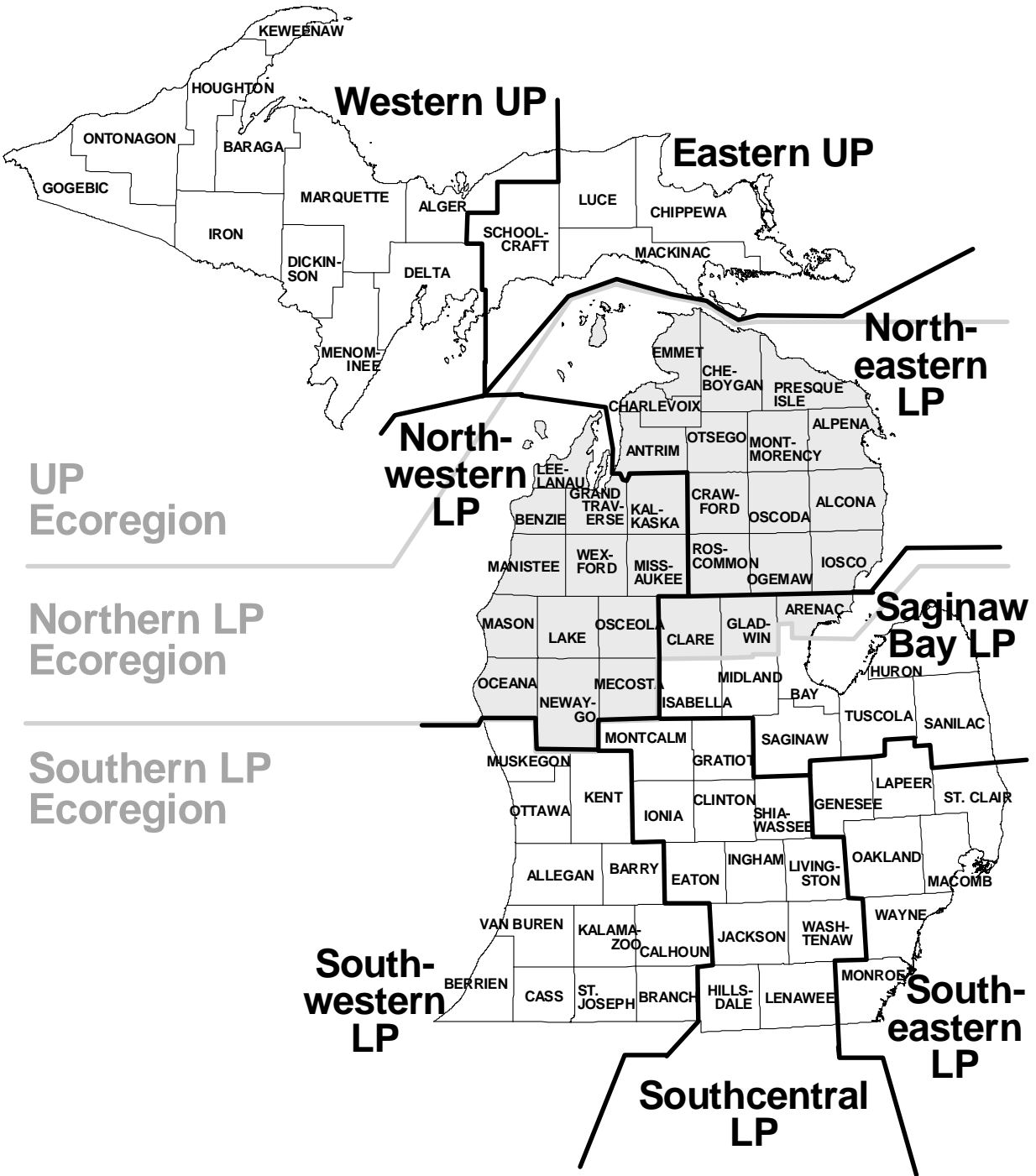


Figure 1. Areas used to summarize deer harvest in Michigan for the 2013 hunting seasons.

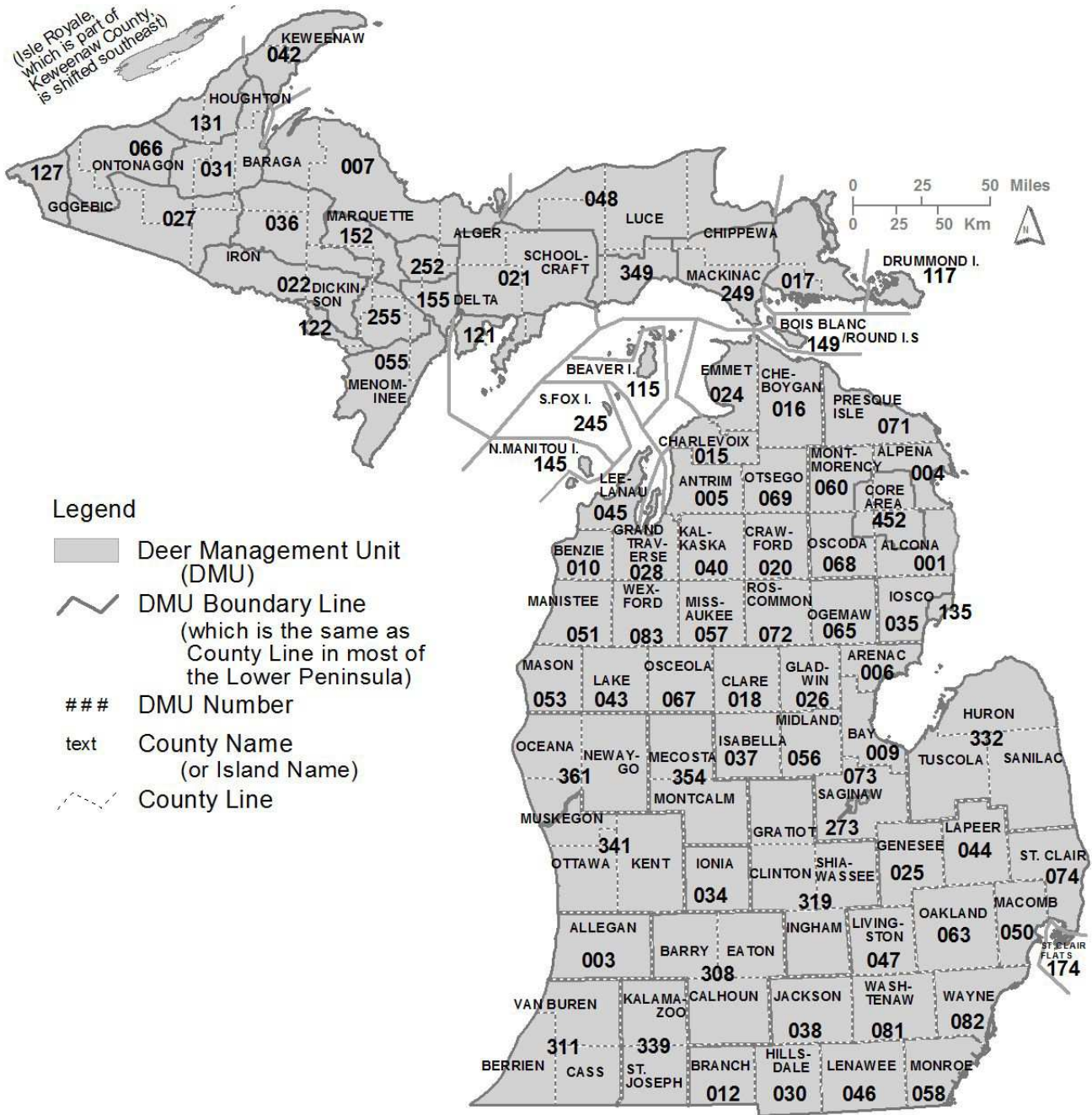


Figure 2. Deer Management Units in Michigan for the 2013 hunting seasons.

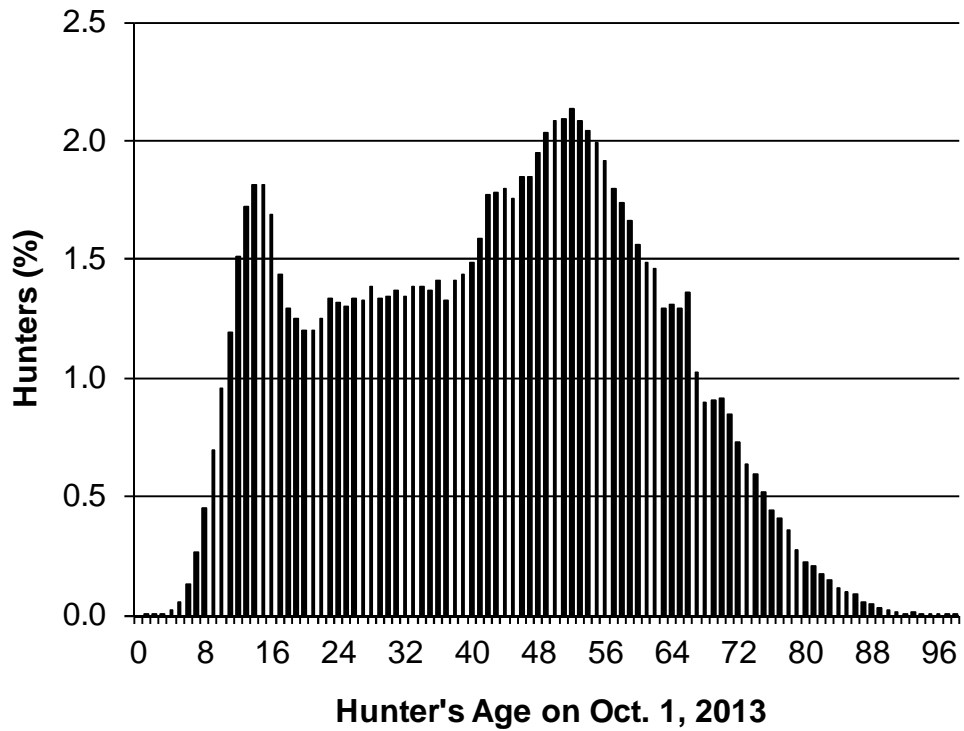


Figure 3. Age of people that purchased a deer hunting license in Michigan for the 2013 hunting seasons ($\bar{x} = 42$ years).

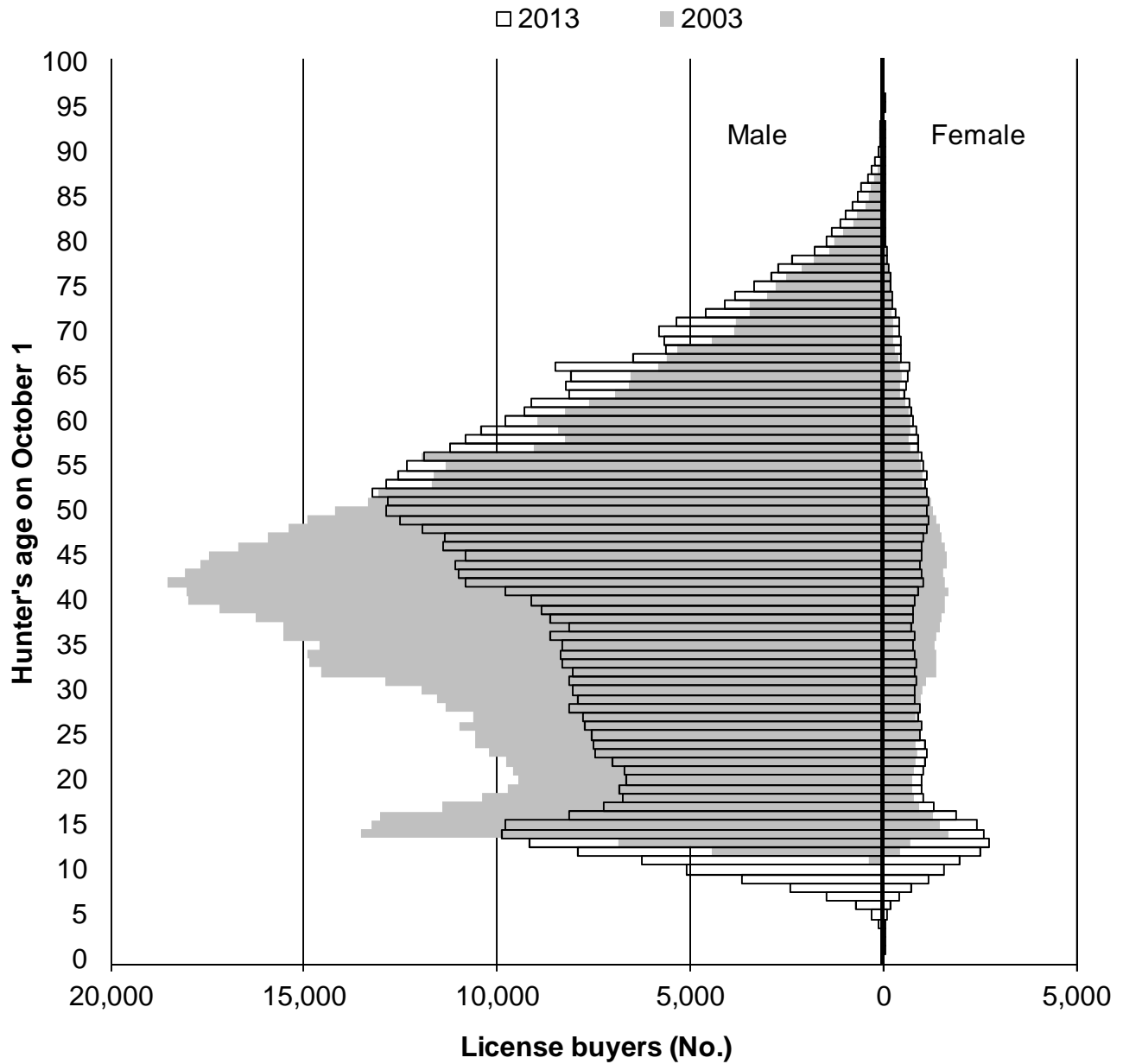


Figure 4. Number of deer hunting license buyers in Michigan by age and sex during 2003 and 2013 hunting seasons. Deer hunting licenses were purchased by 787,951 people in 2003 and 712,404 people in 2013.

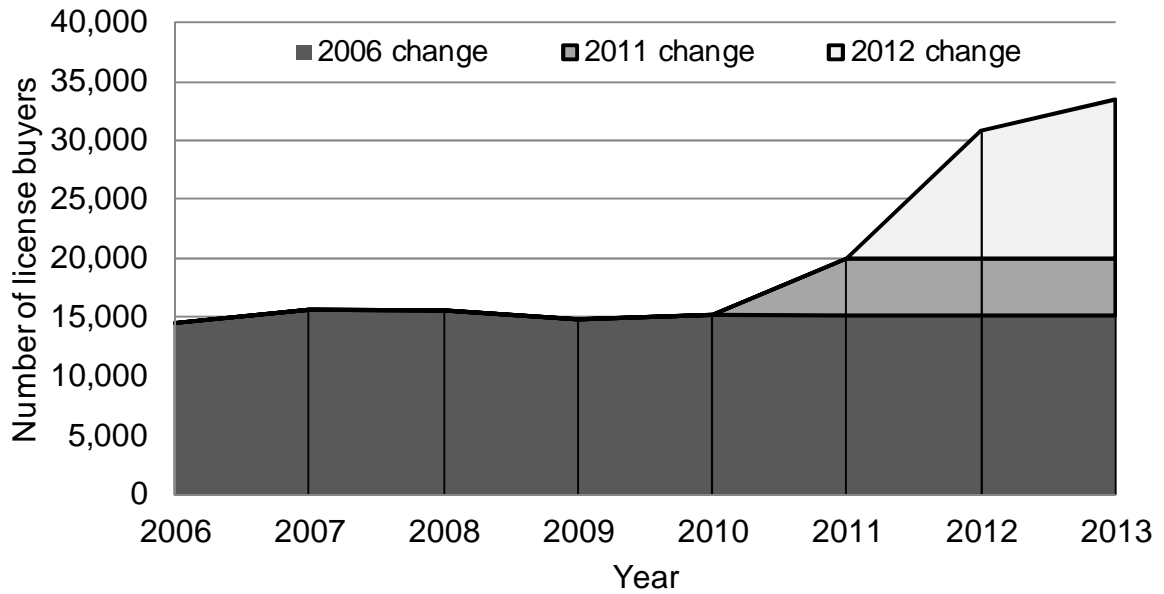


Figure 5. The number of youth deer hunting license buyers by year during 2006-2013, showing annual differences attributed to lowering the minimum age requirement.

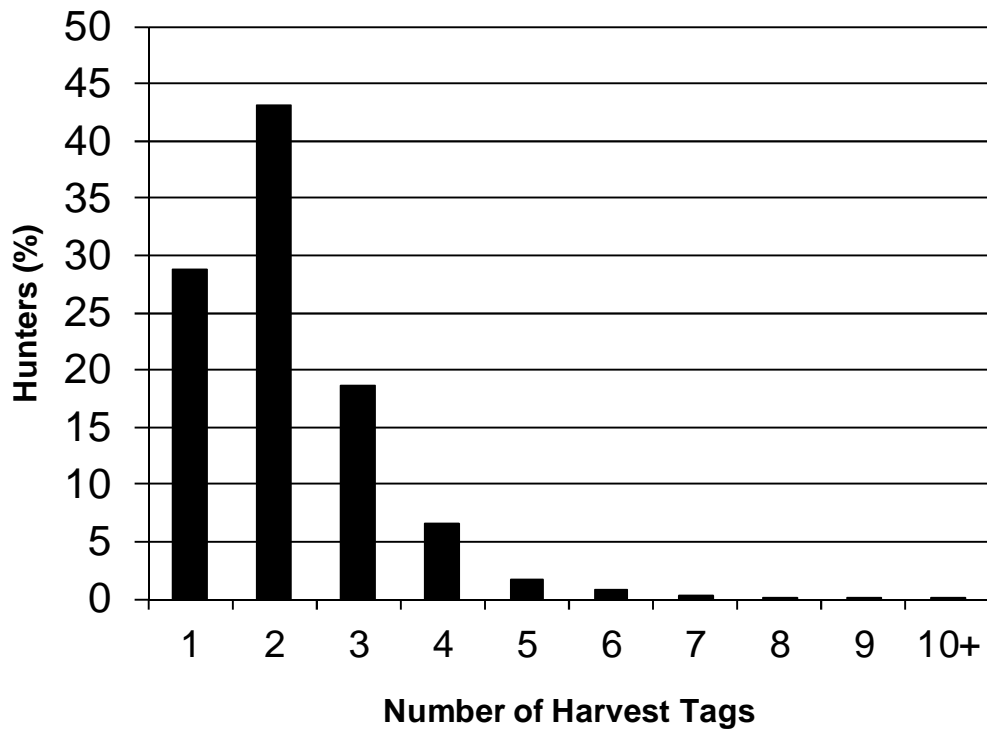


Figure 6. Number of harvest tags (all license and tag types) issued per person for hunting deer in Michigan during the 2013 hunting seasons ($\bar{x} = 2.2$ tags). Licenses were purchased by 701,001 people.

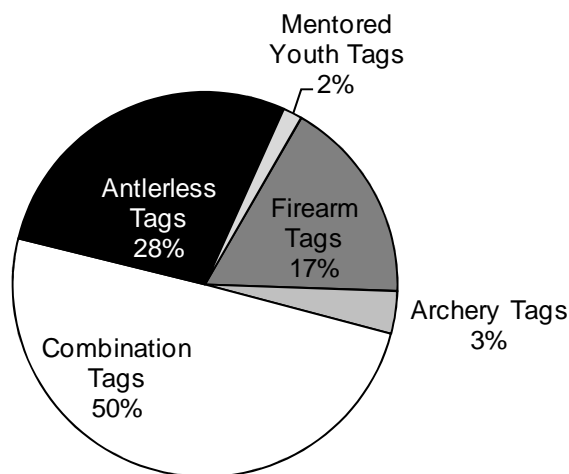


Figure 7. Types of harvest tags issued for deer hunting in Michigan during the 2013 hunting seasons.

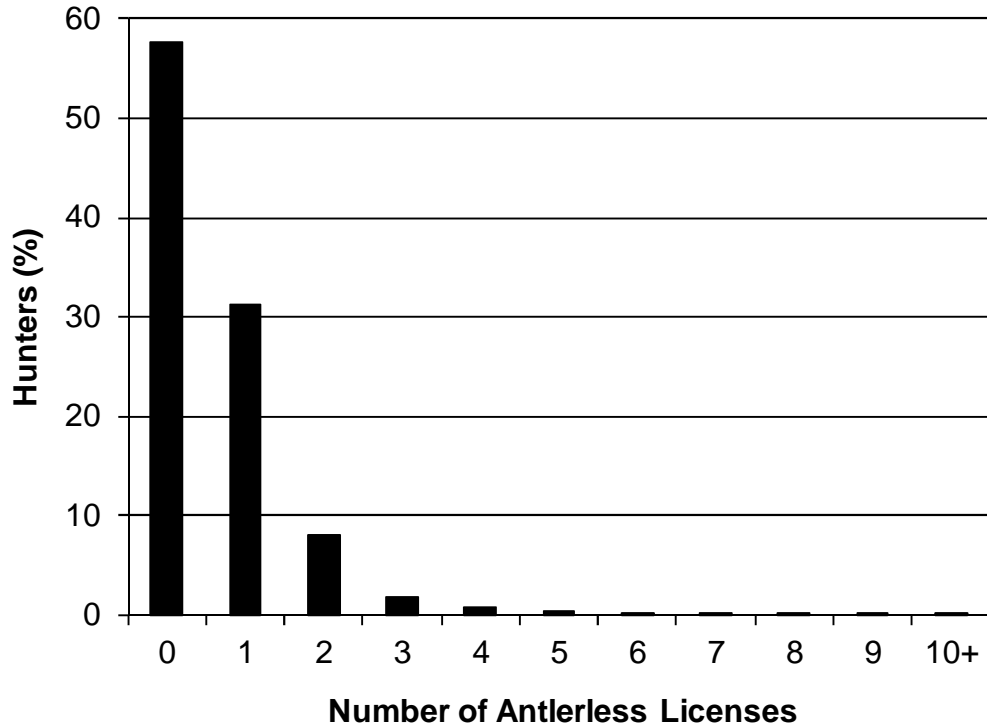


Figure 8. Percentage of deer hunting license buyers (all license types) purchasing an antlerless license in Michigan, 2013. Antlerless licenses were purchased by 302,050 of 712,404 people (42%) buying deer hunting licenses.

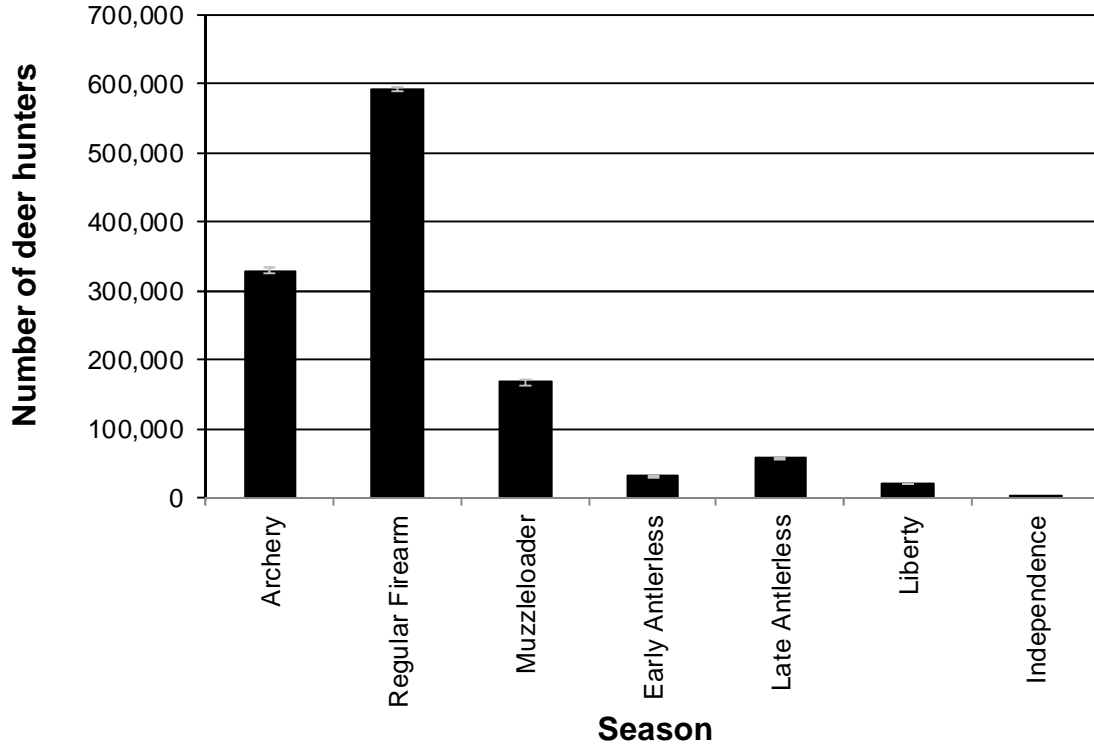


Figure 9. Number of people hunting deer in Michigan during the 2013 hunting seasons. Error bars represent the 95% CLs.

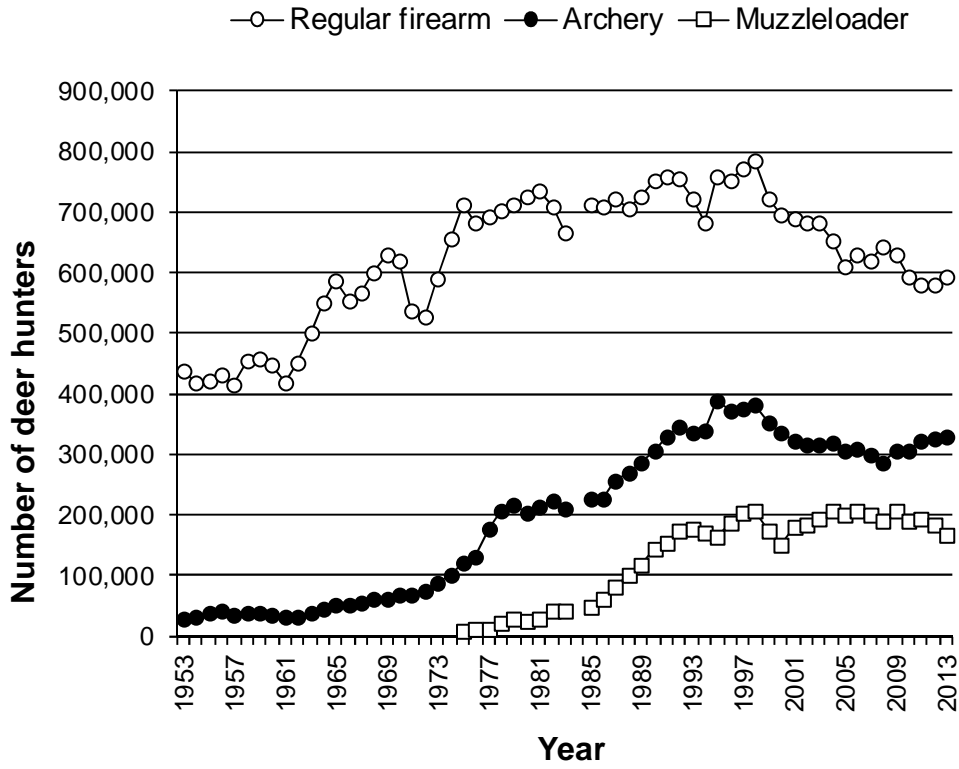


Figure 10. Number of people hunting deer in Michigan during the regular firearm, archery, and muzzleloader seasons, 1953-2013.

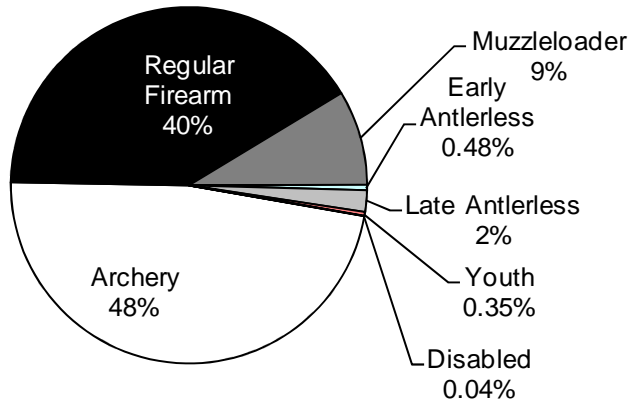


Figure 11. Distribution of hunting effort among deer hunting seasons in Michigan, 2013.

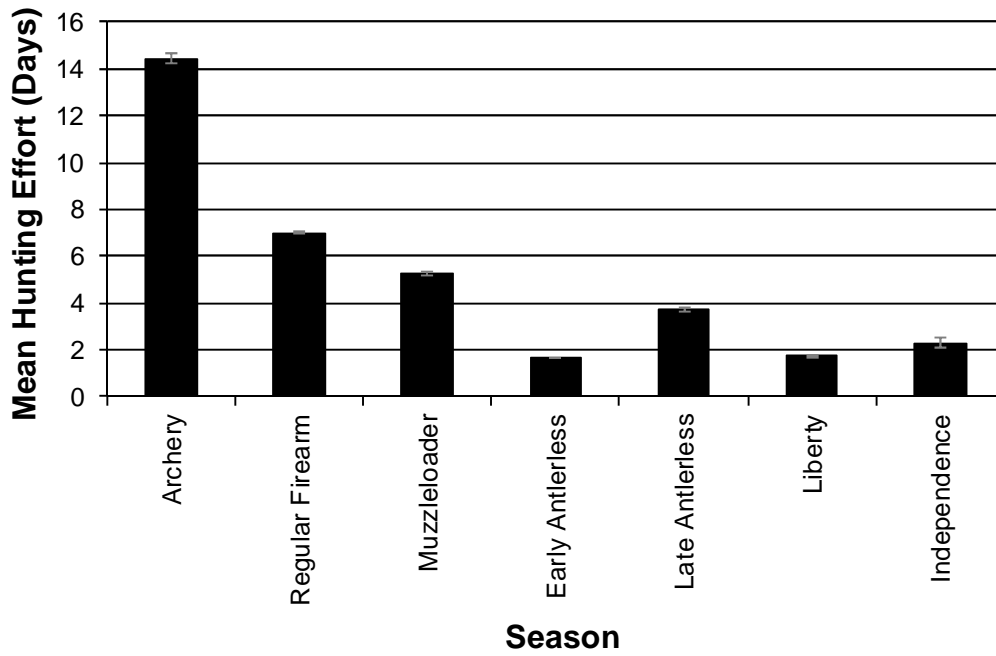


Figure 12. Mean number of days per hunter spent hunting deer in Michigan during the 2013 hunting seasons. Error bars represent the 95% CLs.

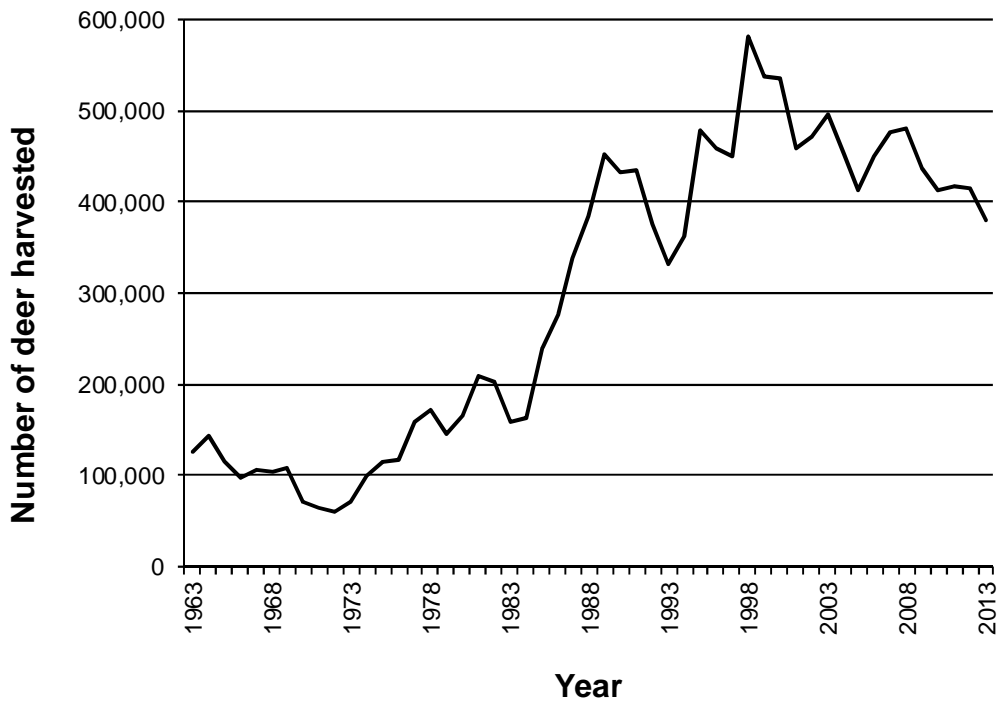


Figure 13. Number of deer harvested in Michigan's hunting seasons, 1963-2013. Harvest from all seasons and for all deer sexes was combined.

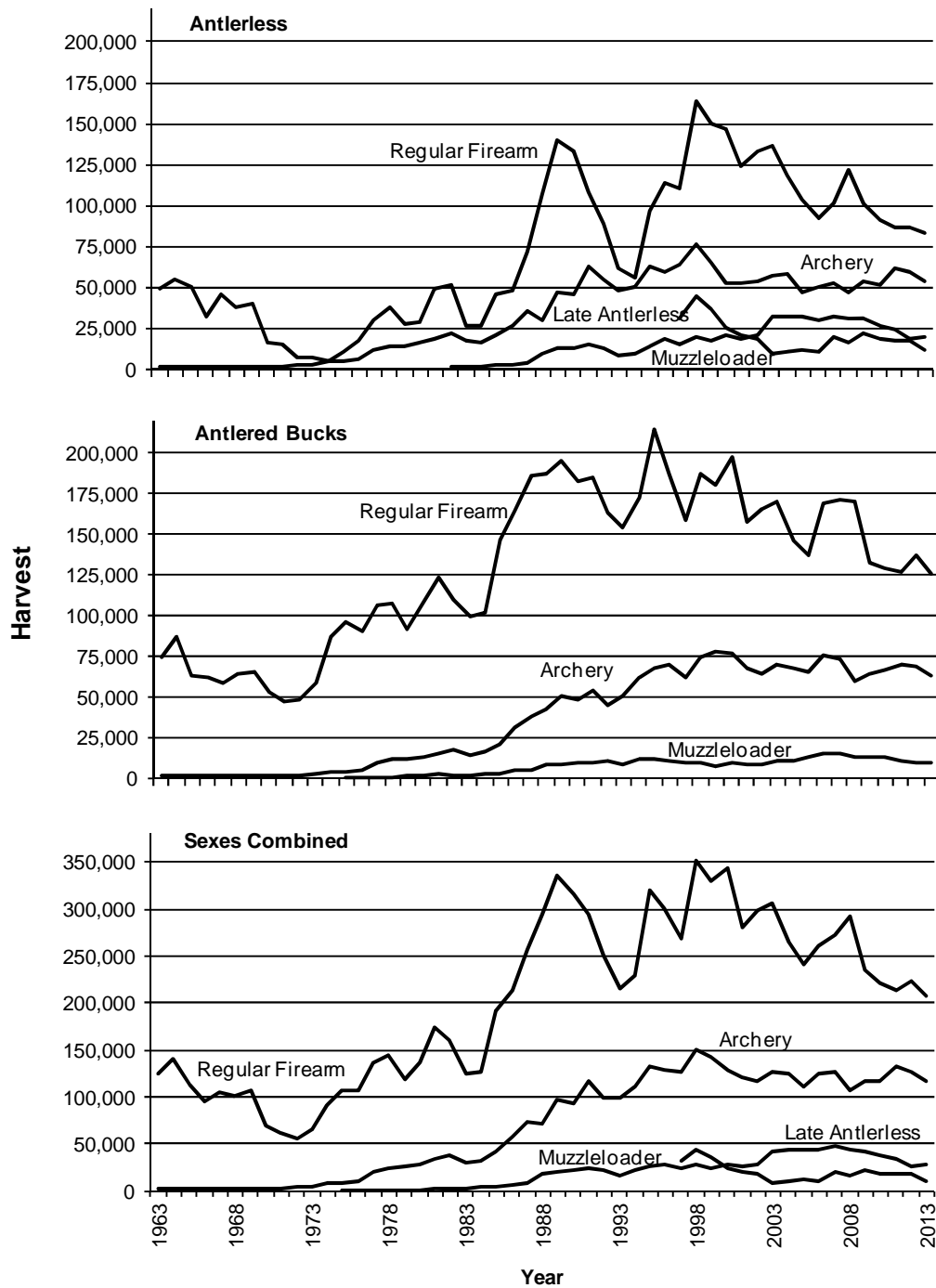


Figure 14. Number of deer harvested in Michigan's hunting seasons, 1963-2013. Harvests for early antlerless, youth, and special disabled hunter seasons were not shown.

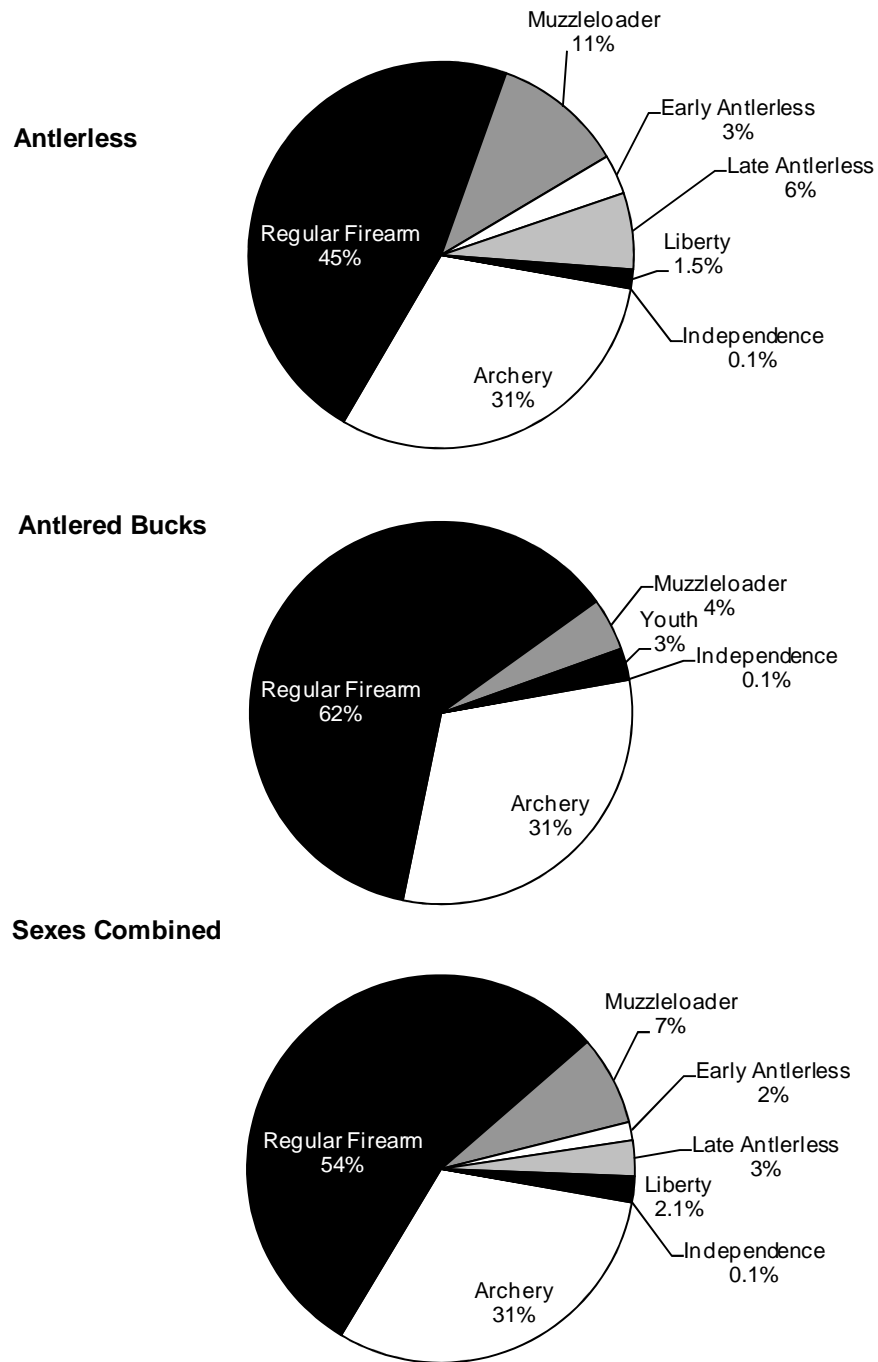


Figure 15. Distribution of harvest among deer hunting seasons in Michigan, 2013. Antlered deer had antlers at least 3 inches in length; antlerless deer included deer without antlers and deer with antlers less than 3 inches in length.

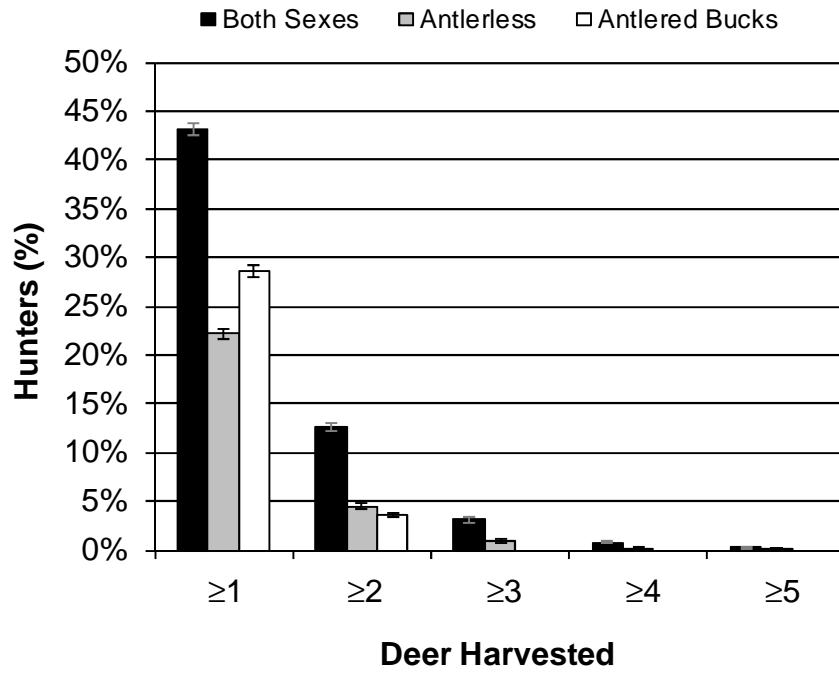


Figure 16. Percentage of hunters harvesting a deer in Michigan, 2013. Error bars represent the 95% CLs.

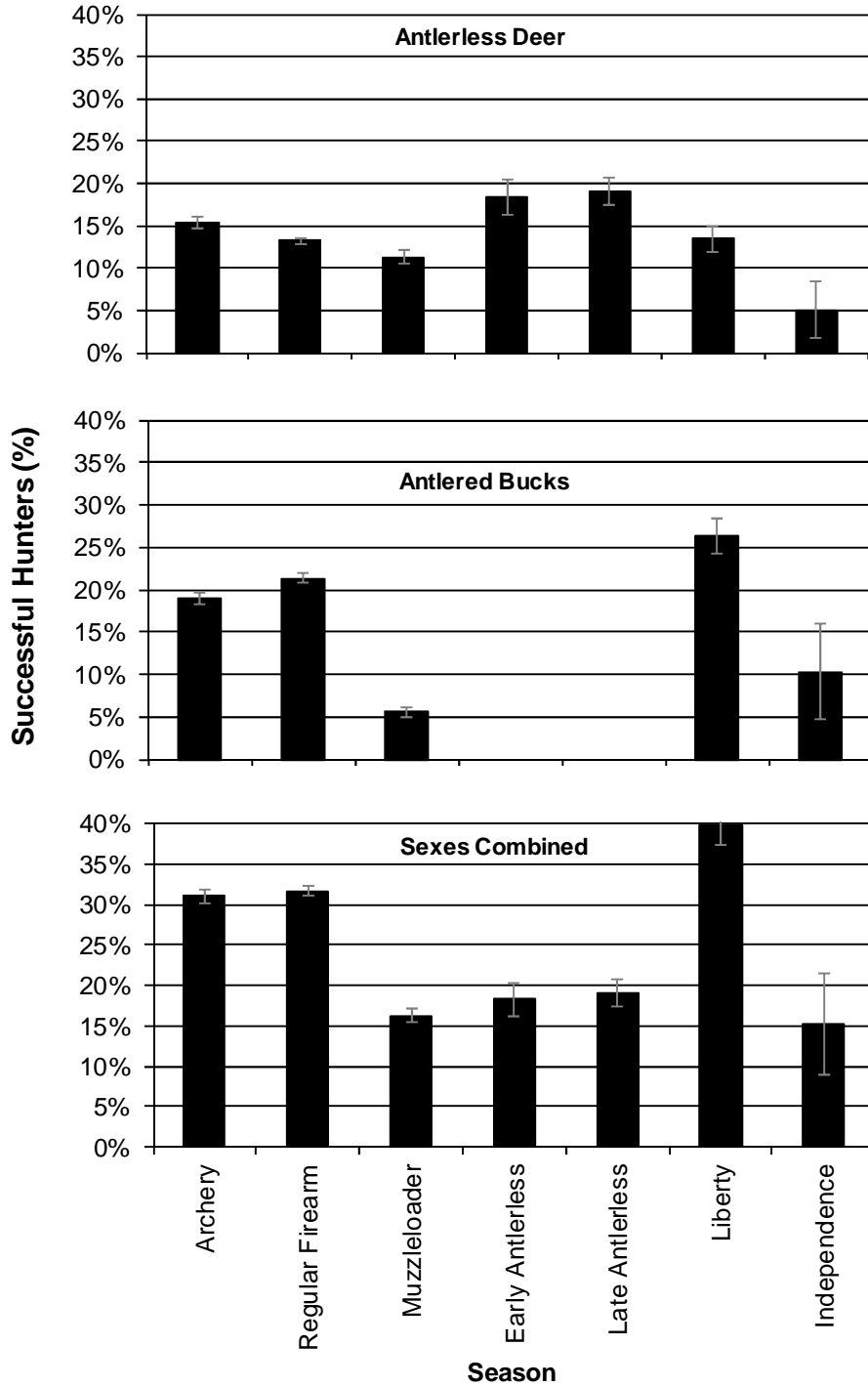


Figure 17. Percentage of hunters harvesting a deer in Michigan's deer hunting seasons, 2013. Error bars represent the 95% CLs. Antlered deer had at least one antler at least 3 inches in length; antlerless deer included deer without antlers and deer with antlers less than 3 inches in length.

Table 1. Type of deer that could be taken during the 2013 Michigan deer hunting seasons for each combination of season and hunting license.

Type of license (harvest tag) or permit	Season	Type of deer that could be harvested ^a
Archery License	Archery seasons	Antlerless or antlered deer ^b
Firearm License	Regular Firearm or Muzzleloader seasons	Antlered deer statewide or antlerless deer in DMU 487 ^b
Firearm License	Liberty and Independence seasons ^c	Antlerless or antlered deer ^b
Combination License ^d (Regular harvest tag)	Archery season	Antlerless or antlered deer ^b
Combination License ^d (Regular harvest tag)	Regular Firearm or Muzzleloader seasons	Antlered deer statewide or antlerless deer in DMU 487
Combination License ^d (Regular harvest tag)	Liberty and Independence seasons	Antlerless or antlered deer
Combination License ^d (Restricted harvest tag)	Archery seasons	Antlerless deer or a deer that has at least 1 antler with 4 or more antler points, 1 or more inches in length
Combination License ^d (Restricted harvest tag)	Regular Firearm or Muzzleloader seasons	A deer that has at least 1 antler with 4 or more antler points (1 or more inches in length) or an antlerless deer in DMU 487
Combination License ^d (Restricted harvest tag)	Liberty and Independence seasons ^c	Antlerless or antlered deer which has at least 1 antler with 4 or more antler points 1 or more inches in length

^aAntlered deer had antlers at least 3 inches in length; antlerless deer included deer without antlers and deer with antlers less than 3 inches in length. Hunters could harvest a maximum of 2 antlered deer per year (all seasons combined).

^bIf a person took 2 antlered deer during all seasons combined (except Mentored Youth hunters), one of the antlered deer must have had at least 1 antler with 4 or more antler points, each point being 1 or more inches in length.

^cYouth less than 14 years of age could hunt with archery and crossbow equipment on public or private lands or with a firearm on private or Commercial Forest lands only. Hunters could harvest only 1 deer in the Liberty and Independence seasons.

^dCombination licenses included two harvest tags (i.e., regular and restricted harvest tags).

Table 1 (Continued). Type of deer that could be taken during the 2013 Michigan deer hunting seasons for each combination of season and hunting license.

Type of license (harvest tag) or permit	Season	Type of deer that could be harvested ^a
Mentored Youth	Archery, Regular Firearm, Liberty, Independence, or Muzzleloader seasons	Antlerless or antlered deer
Mentored Youth	Antlerless seasons	Antlerless deer only
Antlerless License ^e	All seasons	Antlerless deer only
Deer Management Assistance (DMA) permit ^f	All seasons	Antlerless deer only
Managed Deer Hunt permit ^g	Specified season	Antlerless deer only

^aAntlered deer had antlers at least 3 inches in length; antlerless deer included deer without antlers and deer with antlers less than 3 inches in length. Hunters could harvest a maximum of 2 antlered deer per year (all seasons combined).

^bIf a person took 2 antlered deer during all seasons combined (except Mentored Youth hunters), one of the antlered deer must have had at least 1 antler with 4 or more antler points, each point being 1 or more inches in length.

^cYouth less than 14 years of age could hunt with archery and crossbow equipment on public or private lands or with a firearm on private or Commercial Forest lands only. Hunters could harvest only 1 deer in the Liberty and Independence seasons.

^dCombination licenses included two harvest tags (i.e., regular and restricted harvest tags).

^eAlthough antlerless licenses were only valid for taking an antlerless deer, a person with a valid antlerless deer hunting license that killed a male deer with antlers less than 3 inches in length could choose to tag the male deer with any deer hunting license (firearm, archery or either combination license).

^fPermits issued to landowners in areas where the number of antlerless licenses was insufficient to meet the objective of specific landowners (i.e., controlling disease or the deer population). To use these permits, the hunter must also have purchased a valid deer hunting license for the season in which they were hunting.

^gPermits for special hunts on designated public lands (e.g., some state parks, game areas, and federal property). These permits valid only during specific dates, which varied among areas. Permits issued to applicants using a lottery (i.e., random selection). To use these permits, the hunter must also have purchased a valid deer hunting license.

Table 2. Number of Michigan deer licenses purchased and harvest tags issued, 2011-2013.

Licenses or Harvest Tags	Number Purchased or Issued			Change Between 2012 and 2013 (%)
	2011	2012	2013	
Firearm Licenses				
Resident	196,470	193,144	187,757	-2.8
Non-resident	12,571	12,442	13,452	8.1
Senior	36,729	36,739	36,411	-0.9
Junior	18,175	21,303	23,964	12.5
Military	1,001	1,127	1,568	39.1
Disabled Veteran	NA	NA	753	NA
Subtotal	264,946	264,755	263,905	-0.3
Archery Licenses				
Resident	41,804	42,831	40,146	-6.3
Non-resident	3,022	3,325	3,365	1.2
Junior	4,224	3,793	3,584	-5.5
Senior	6,148	6,870	6,916	0.7
Military	361	383	494	29.0
Disabled Veteran	NA	NA	283	NA
Subtotal	55,559	57,202	54,788	-4.2
Combination Licenses^a				
Resident	280,744	279,436	282,328	1.0
Non-resident	2,060	2,155	2,289	6.2
Junior	43,293	46,298	46,622	0.7
Senior	41,511	43,262	43,440	0.4
Military	1,727	1,849	3,498	89.2
Disabled Veteran	NA	NA	2,910	NA
Subtotal	369,335	373,000	381,087	2.2
Antlerless Licenses				
Resident	445,018	417,676	405,313	-3.0
Non-resident	3,150	2,150	2,134	-0.7
Junior	3,117	3,481	4,354	25.1
Military	2,493	2,338	4,295	83.7
Pure Michigan Hunt	3	3	3	0.0
Disabled Veteran	NA	NA	1,954	NA
Deer Management Assistance	8,219	8,234	8,981	9.1
Managed Deer Hunt	343	274	185	-32.5
Subtotal	462,343	434,156	427,219	-1.6
Mentored Youth Licenses^a	NA	10,361	12,384	19.5
Total Licenses Sold	1,152,183	1,139,474	1,139,383	0.0

^aCombination and Mentored Youth licenses included two harvest tags. Other license types had one harvest tag.””

Table 2 (Continued). Number of Michigan deer licenses purchased and harvest tags issued, 2011-2013.

Licenses or Harvest Tags	Number Purchased or Issued			Change Between 2012 and 2013 (%)
	2011	2012	2013	
Harvest Tags Issued				
Firearm	264,946	264,755	263,905	-0.3
Archery	55,559	57,202	54,788	-4.2
Combination ^a	738,670	746,000	762,174	2.2
Antlerless	462,343	434,156	427,219	-1.6
Mentored Youth ^a	NA	20,722	24,768	19.5
Total Harvest Tags	1,521,518	1,522,835	1,532,854	0.7

^aCombination and Mentored Youth licenses included two harvest tags. Other license types had one harvest tag.

Table 3. Number of deer hunters and hunting effort in Michigan by hunting season, 2012-2013.

Season and Area	Number of hunters ^a				Hunting effort (days)			
	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)
Archery								
West UP	24,133	24,922	1,616	3.3	263,892	267,471	24,032	1.4
East UP	7,488	7,724	916	3.1	67,667	76,546	13,502	13.1
NE LP	46,598	47,977	2,201	3.0	484,025	499,360	32,412	3.2
NW LP	64,340	64,711	2,505	0.6	753,234	746,257	39,488	-0.9
Sag. Bay	57,976	60,631	2,425	4.6	701,865	757,837	41,751	8.0
SW LP	54,381	54,412	2,297	0.1	713,493	735,931	41,766	3.1
SC LP	66,991	64,922	2,472	-3.1	912,283	854,202	44,836	-6.4
SE LP	38,683	36,471	1,907	-5.7	478,611	456,010	32,442	-4.7
UP	31,436	32,363	2,896	2.9	331,559	344,017	27,565	3.8
NLP	127,910	130,698	4,111	2.2	1,467,553	1,493,706	56,484	1.8
SLP	191,548	189,246	3,889	-1.2	2,575,958	2,555,890	77,264	-0.8
Statewide ^c	325,424	328,655	4,281	1.0	4,375,070	4,393,613	99,765	0.4
Regular Firearm								
West UP	67,039	70,704	2,592	5.5	471,149	502,433	22,652	6.6
East UP	21,276	22,179	1,533	4.2	134,608	135,071	11,300	0.3
NE LP	104,991	108,733	3,148	3.6	624,931	619,224	23,030	-0.9
NW LP	115,017	118,184	3,224	2.8	654,744	673,005	23,905	2.8
Sag. Bay	92,555	94,472	2,936	2.1	535,401	551,139	21,787	2.9
SW LP	79,148	80,079	2,702	1.2	502,156	496,100	21,234	-1.2
SC LP	99,670	97,577	2,902	-2.1	607,263	586,718	22,835	-3.4
SE LP	41,737	39,950	1,988	-4.3	241,183	233,358	14,437	-3.2
UP	87,928	92,571	1,829	5.3*	605,757	637,503	25,314	5.2
NLP	246,623	254,818	3,368	3.3*	1,451,445	1,476,586	35,564	1.7
SLP	275,583	274,499	3,703	-0.4	1,714,234	1,682,958	38,633	-1.8
Statewide ^c	580,286	593,079	2,987	2.2*	3,771,436	3,797,047	58,508	0.7

^aExcluded people that did not hunt during the season.

^b95% confidence limit for the 2013 estimate. ^{*}P<0.005.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one area.

Table 3 (continued). Number of deer hunters and hunting effort in Michigan by hunting season, 2012-2013.

Season and Area	Number of hunters ^a				Hunting effort (days)			
	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)
Muzzleloader								
West UP	14,923	13,857	1,226	-7.1	72,933	65,707	6,633	-9.9
East UP	5,627	4,259	682	-24.3	27,227	18,763	3,578	-31.1*
NE LP	22,230	19,420	1,440	-12.6	87,538	75,280	6,508	-14.0
NW LP	25,008	22,348	1,540	-10.6	95,686	89,337	7,255	-6.6
Sag. Bay	30,890	29,497	1,740	-4.5	130,911	130,726	9,489	-0.1
SW LP	33,894	30,687	1,760	-9.5	179,071	155,818	10,979	-13.0*
SC LP	40,221	35,412	1,872	-12.0*	197,620	173,866	11,449	-12.0*
SE LP	19,428	17,833	1,355	-8.2	95,425	86,988	8,009	-8.8
UP	20,434	18,054	1,392	-11.6	100,160	84,470	7,537	-15.7*
NLP	55,271	49,376	2,243	-10.7*	216,085	195,084	10,575	-9.7
SLP	112,988	103,043	2,951	-8.8*	570,165	516,930	19,722	-9.3*
Statewide ^c	184,011	167,832	3,649	-8.8*	886,410	796,484	23,714	-10.1*
Early Antlerless								
West UP	0	0	0		0	0	0	
East UP	0	0	0		0	0	0	
NE LP	2,486	3,695	585	48.6*	3,852	5,667	982	47.1
NW LP	2,067	2,084	413	0.9	2,940	2,827	624	-3.8
Sag. Bay	5,271	6,194	723	17.5	7,400	9,319	1,171	25.9
SW LP	5,407	6,021	709	11.4	7,942	8,849	1,100	11.4
SC LP	6,873	8,124	826	18.2	10,011	11,003	1,227	9.9
SE LP	4,669	4,532	624	-2.9	6,558	6,564	991	0.1
UP	0	0	0		0	0	0	
NLP	4,857	6,164	734	26.9	7,187	9,167	1,205	27.6
SLP	21,700	24,333	1,393	12.1	31,517	35,063	2,230	11.3
Statewide ^c	27,125	31,155	734	14.9*	38,704	44,230	2,553	14.3*

^aExcluded people that did not hunt during the season.

^b95% confidence limit for the 2013 estimate. *P<0.005.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one area.

Table 3 (continued). Number of deer hunters and hunting effort in Michigan by hunting season, 2012-2013.

Season and Area	Number of hunters ^a				Hunting effort (days)			
	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)
Late Antlerless								
West UP	0	0	0		0	0	0	
East UP	0	0	0		0	0	0	
NE LP	5,702	3,643	612	-36.1*	22,821	11,638	2,488	-49.0*
NW LP	4,459	2,547	510	-42.9*	16,739	7,002	1,927	-58.2*
Sag. Bay	11,873	9,952	1,001	-16.2	44,545	30,823	3,810	-30.8*
SW LP	17,554	14,170	1,195	-19.3*	70,796	47,952	4,969	-32.3*
SC LP	21,960	18,100	1,332	-17.6*	87,556	56,365	5,175	-35.6*
SE LP	9,613	8,347	924	-13.2	39,429	25,701	3,444	-34.8*
UP	0	0	0		0	0	0	
NLP	10,446	6,591	817	-36.9*	40,957	19,883	3,234	-51.5*
SLP	59,741	49,656	2,094	-16.9*	240,929	159,598	8,792	-33.8*
Statewide ^c	71,248	57,137	2,218	-19.8*	281,887	179,481	9,404	-36.3*
Liberty^d								
West UP	2,189	1,560	263	-28.7*	3,408	2,635	468	-22.7
East UP	470	360	115	-23.5	785	583	198	-25.7
NE LP	3,708	2,744	366	-26.0*	6,173	4,300	610	-30.3*
NW LP	7,581	4,640	450	-38.8*	12,337	7,232	758	-41.4*
Sag. Bay	7,732	4,255	450	-45.0*	12,559	6,746	763	-46.3*
SW LP	4,836	1,923	295	-60.2*	7,477	2,723	443	-63.6*
SC LP	6,527	3,646	428	-44.2*	10,016	5,297	682	-47.1*
SE LP	3,476	1,926	317	-44.6*	5,575	3,096	538	-44.5*
UP	2,659	1,920	286	-27.8*	4,193	3,218	508	-23.3
NLP	13,411	8,713	614	-35.0*	21,896	13,649	1,058	-37.7*
SLP	20,292	10,353	689	-49.0*	32,241	15,744	1,166	-51.2*
Statewide ^c	36,418	21,011	902	-42.3*	58,330	32,611	1,659	-44.1*

^aExcluded people that did not hunt during the season.

^b95% confidence limit for the 2013 estimate. ^cP<0.005.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one area.

^d2012 estimates for the Liberty Hunt excluded disabled hunters, but 2013 estimates included results of both youth and disabled hunters.

Table 3 (continued). Number of deer hunters and hunting effort in Michigan by hunting season, 2012-2013.

Season and Area	Number of hunters ^a				Hunting effort (days)			
	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)	2012	2013	95% CL ^b	Change from 2012 to 2013 (%)
Independence ^d								
West UP	167	76	32	-54.6	294	184	74	-37.3
East UP	42	39	23	-7.0	77	83	33	8.0
NE LP	168	286	141	70.0	310	606	362	95.7
NW LP	161	344	143	113.7	343	627	321	82.9
Sag. Bay	267	236	126	-11.8	580	371	198	-36.0
SW LP	231	376	175	63.0	573	777	391	35.6
SC LP	135	359	165	165.4	229	535	288	134.0
SE LP	116	236	137	104.3	271	590	378	117.5
UP	209	115	39	-45.1	371	267	81	-27.9
NLP	379	684	210	80.4	847	1,283	485	51.5
SLP	696	1,153	298	65.7	1,459	2,223	646	52.4
Statewide ^c	1,348	1,975	371	46.5	2,676	3,773	812	41.0
All Seasons								
West UP	75,784	78,894	2,711	4.1	811,483	838,265	42,541	3.3
East UP	25,261	25,707	1,642	1.8	230,269	231,006	22,530	0.3
NE LP	120,194	123,451	3,304	2.7	1,229,543	1,216,024	51,811	-1.1
NW LP	135,900	135,481	3,384	-0.3	1,536,443	1,526,556	59,948	-0.6
Sag. Bay	113,356	112,675	3,146	-0.6	1,433,372	1,487,041	63,960	3.7
SW LP	98,109	97,027	2,928	-1.1	1,481,329	1,448,081	65,402	-2.2
SC LP	122,185	119,588	3,148	-2.1	1,824,921	1,687,908	69,634	-7.5
SE LP	60,077	56,234	2,316	-6.4	867,154	812,359	48,743	-6.3
UP	100,377	103,937	3,029	3.5	1,041,751	1,069,270	48,139	2.6
NLP	285,531	289,262	4,188	1.3	3,206,448	3,209,697	86,894	0.1
SLP	340,006	334,502	3,961	-1.6	5,166,313	4,968,272	119,669	-3.8
Statewide ^c	654,122	661,788	1,878	1.2*	9,414,513	9,247,240	155,858	-1.8

^aExcluded people that did not hunt during the season.

^b95% confidence limit for the 2013 estimate. $P < 0.005$.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one area.

^d2012 estimates for the Independence Hunt included two separate disabled hunter seasons, but 2013 estimates included only one season.

Table 4. Mean number of days hunters spent hunting deer (\bar{x} hunting effort) in Michigan by hunting season, 2013.^a

Area	Season							
	Archery		Regular Firearm		Muzzleloader		Early Antlerless	
	\bar{x} days	95% CL ^b	\bar{x} days	95% CL ^b	\bar{x} days	95% CL ^b	\bar{x} days	95% CL ^b
West UP	11.6	0.7	7.6	0.2	5.1	0.2	0.0	0.0
East UP	10.9	1.4	6.7	0.3	5.1	0.4	0.0	0.0
NE LP	11.1	0.5	6.1	0.1	4.3	0.2	1.8	0.1
NW LP	12.3	0.4	6.1	0.1	4.3	0.2	1.7	0.1
Sag. Bay	13.4	0.5	6.3	0.1	4.8	0.2	1.7	0.1
SW LP	14.5	0.5	6.8	0.2	5.5	0.2	1.6	0.1
SC LP	14.1	0.5	6.5	0.1	5.4	0.2	1.6	0.1
SE LP	13.6	0.6	6.4	0.2	5.3	0.3	1.7	0.1
UP	11.5	0.6	7.4	0.1	5.1	0.2	0.0	0.0
NLP	12.2	0.3	6.2	0.1	4.3	0.1	1.8	0.1
SLP	14.5	0.3	6.7	0.1	5.5	0.1	1.6	0.0
Statewide	14.5	0.2	7.0	0.1	5.2	0.1	1.7	0.0

^aExcluded people that did not hunt during the season.^b95% confidence limit.Table 4 (Continued). Mean number of days hunters spent hunting deer (\bar{x} hunting effort) in Michigan by hunting season, 2013.^a

Area	Season							
	Late Antlerless		Liberty		Disabled		All Seasons	
	\bar{x} days	95% CL ^b	\bar{x} days	95% CL ^b	\bar{x} days	95% CL ^b	\bar{x} days	95% CL ^b
West UP	0.0	0.0	1.8	0.1	2.6	0.5	11.4	0.4
East UP	0.0	0.0	1.8	0.1	2.3	0.8	9.8	0.7
NE LP	3.8	0.4	1.8	0.1	2.6	0.4	10.5	0.3
NW LP	3.6	0.6	1.7	0.0	2.3	0.5	12.1	0.3
Sag. Bay	3.7	0.2	1.7	0.1	1.9	0.4	14.2	0.4
SW LP	3.9	0.2	1.6	0.1	2.3	0.5	16.1	0.5
SC LP	3.6	0.2	1.6	0.1	1.9	0.5	15.2	0.4
SE LP	3.6	0.2	1.7	0.1	2.6	0.7	15.7	0.7
UP	0.0	0.0	1.8	0.1	2.5	0.4	11.1	0.4
NLP	3.7	0.3	1.7	0.0	2.5	0.3	11.9	0.2
SLP	3.7	0.1	1.7	0.0	2.2	0.3	16.0	0.3
Statewide	3.7	0.1	1.7	0.0	2.3	0.2	15.2	0.2

^aExcluded people that did not hunt during the season.^b95% confidence limit.

Table 5. Number of deer harvested in Michigan, 2011-2013.

Season or permit	Type of deer	2011	2012	2013	Change from 2012 to 2013 (%)
Season					
Archery	Antlerless	61,466	58,933	53,890	-8.6
	Antlered bucks	70,148	68,348	62,933	-7.9*
	Sexes combined	131,615	127,281	116,823	-8.2*
Regular firearm	Antlerless	86,697	85,978	82,693	-3.8
	Antlered bucks	127,373	137,280	125,625	-8.5*
	Sexes combined	214,070	223,258	208,317	-6.7*
Muzzleloader	Antlerless	23,838	17,901	19,311	7.9
	Antlered bucks	10,418	9,034	9,020	-0.2
	Sexes combined	34,256	26,935	28,331	5.2
Early antlerless	Antlerless	10,892	6,045	5,820	-3.7
Late antlerless	Antlerless	17,345	17,498	11,228	-35.8*
Early youth	Antlerless	713	0	0	
Liberty ^a	Antlerless	2,736	4,846	2,696	-44.4*
	Antlered bucks	4,634	7,857	5,285	-32.7*
	Sexes combined	7,370	12,703	7,981	-37.2*
Independence ^b	Antlerless	242	162	97	-40.1
	Antlered bucks	217	121	195	61.3
	Sexes combined	460	283	292	3.1
Special permits ^c	Antlerless	5,293	6,213	6,508	4.7
Grand Total	Antlerless	209,223	197,577	182,245	-7.8*
	Antlered bucks	212,791	222,640	203,057	-8.8*
	Sexes combined	422,014	420,217	385,302	-8.3*

^a2011 and 2012 estimates for the Liberty Hunt excluded disabled hunters, but 2013 estimates included results of both youth and disabled hunters.

^b2011 and 2012 estimates for the Independence Hunt included two separate disabled hunter seasons, but 2013 estimates included only one season.

^cIncludes deer harvested with DMA permits. These permits could be used during any deer hunting season.

*P<0.005.

Table 6. Number of deer harvested in Michigan by hunting season, 2012-2013.^a

Season and Area	Antlerless				Antlered Bucks				Sexes Combined			
	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013 (%)	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013
Archery												
West UP	4,662	4,332	714	-7.1	4,122	3,781	648	-8.3	8,784	8,111	997	-7.7
East UP	1,042	1,356	403	30.1	1,135	760	284	-33.0	2,177	2,114	525	-2.9
NE LP	7,050	6,693	897	-5.1	6,778	5,765	795	-14.9	13,828	12,455	1,255	-9.9
NW LP	11,605	10,763	1,108	-7.3	13,167	8,985	1,003	-31.8*	24,772	19,741	1,572	-20.3*
Sag. Bay	10,396	10,218	1,122	-1.7	12,408	11,692	1,132	-5.8	22,804	21,909	1,746	-3.9
SW LP	7,554	6,574	940	-13.0	10,160	10,352	1,078	1.9	17,715	16,930	1,560	-4.4
SC LP	11,079	9,280	1,088	-16.2	13,921	14,450	1,283	3.8	25,001	23,737	1,816	-5.1
SE LP	5,544	4,674	737	-15.7	6,656	7,148	912	7.4	12,200	11,825	1,283	-3.1
UP	5,704	5,688	820	-0.3	5,257	4,541	708	-13.6	10,961	10,226	1,127	-6.7
NLP	22,298	21,100	1,580	-5.4	23,199	18,346	1,432	-20.9*	45,496	39,435	2,247	-13.3*
SLP	30,931	27,102	1,845	-12.4	39,892	40,045	2,124	0.4	70,824	67,163	3,070	-5.2
Statewide	58,933	53,890	2,575	-8.6	68,348	62,933	2,664	-7.9*	127,281	116,823	3,981	-8.2*
Regular Firearm												
West UP	5,690	4,016	696	-29.4*	23,097	18,484	1,420	-20.0*	28,788	22,521	1,635	-21.8*
East UP	84	1	0	-98.8*	5,107	4,073	666	-20.3	5,192	4,081	666	-21.4
NE LP	13,597	13,781	1,250	1.4	22,067	22,681	1,579	2.8	35,664	36,465	2,134	2.2
NW LP	14,097	15,914	1,328	12.9	23,360	19,787	1,465	-15.3*	37,456	35,693	2,129	-4.7
Sag. Bay	18,383	16,020	1,365	-12.9	22,341	20,528	1,476	-8.1	40,723	36,542	2,187	-10.3
SW LP	11,361	11,346	1,180	-0.1	13,575	13,406	1,198	-1.2	24,935	24,745	1,817	-0.8
SC LP	17,873	17,109	1,474	-4.3	21,694	20,439	1,497	-5.8	39,566	37,539	2,278	-5.1
SE LP	4,894	4,506	715	-7.9	6,040	6,228	812	3.1	10,934	10,732	1,178	-1.8
UP	5,774	4,017	696	-30.4*	28,204	22,557	1,569	-20.0*	33,980	26,601	1,765	-21.7*
NLP	33,282	34,350	1,969	3.2	51,335	48,101	2,288	-6.3	84,617	82,444	3,221	-2.6
SLP	46,922	44,326	2,321	-5.5	57,741	54,967	2,433	-4.8	104,662	99,272	3,656	-5.1
Statewide	85,978	82,693	3,140	-3.8	137,280	125,625	3,703	-8.5*	223,258	208,317	5,208	-6.7*

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^b95% confidence limit for the 2013 estimate. *P<0.005.

Table 6 (continued). Number of deer harvested in Michigan by hunting season, 2012-2013.^a

Season and Area	Antlerless				Antlered Bucks				Sexes Combined			
	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013 (%)	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013
Muzzleloader												
West UP	1,500	1,327	397	-11.6	1,087	977	319	-10.2	2,589	2,302	540	-11.1
East UP	28	11	20	-61.7	579	390	200	-32.6	609	399	201	-34.5
NE LP	1,430	2,831	566	98.0*	621	881	303	41.7	2,051	3,713	661	81.1*
NW LP	2,305	2,197	483	-4.7	973	791	284	-18.7	3,277	2,989	577	-8.8
Sag. Bay	4,160	4,429	698	6.4	1,311	1,598	413	21.9	5,469	6,029	847	10.3
SW LP	2,836	2,920	590	3.0	1,438	1,557	399	8.3	4,274	4,476	716	4.7
SC LP	4,160	3,884	675	-6.6	2,402	1,774	433	-26.2	6,563	5,658	827	-13.8
SE LP	1,482	1,714	437	15.7	622	1,052	329	69.1	2,103	2,765	573	31.5
UP	1,528	1,337	397	-12.5	1,666	1,367	376	-18.0	3,198	2,701	576	-15.5
NLP	4,747	6,187	830	30.3	1,744	2,182	475	25.1	6,488	8,372	985	29.0*
SLP	11,627	11,787	1,160	1.4	5,624	5,471	757	-2.7	17,249	17,259	1,429	0.1
Statewide	17,901	19,311	1,485	7.9	9,034	9,020	976	-0.2	26,935	28,331	1,835	5.2
Early Antlerless												
West UP	0	0	0		0	0	0	0	0	0	0	
East UP	0	0	0		0	0	0	0	0	0	0	
NE LP	747	1,297	389	73.8	0	0	0	0	747	1,297	389	73.8
NW LP	655	395	197	-39.7	0	0	0	0	655	395	197	-39.7
Sag. Bay	1,665	1,166	317	-30.0	0	0	0	0	1,665	1,166	317	-30.0
SW LP	577	796	254	37.9	0	0	0	0	577	796	254	37.9
SC LP	1,653	1,729	425	4.6	0	0	0	0	1,653	1,729	425	4.6
SE LP	749	437	187	-41.7	0	0	0	0	749	437	187	-41.7
UP	0	0	0		0	0	0	0	0	0	0	
NLP	1,512	1,765	443	16.7	0	0	0	0	1,512	1,765	443	16.7
SLP	4,534	4,056	611	-10.5	0	0	0	0	4,534	4,056	611	-10.5
Statewide	6,045	5,820	769	-3.7	0	0	0	0	6,045	5,820	769	-3.7

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^b95% confidence limit for the 2013 estimate. *P<0.005.

Table 6 (continued). Number of deer harvested in Michigan by hunting season, 2012-2013.^a

Season and Area	Antlerless				Antlered Bucks				Sexes Combined			
	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013 (%)	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013
Late Antlerless												
West UP	0	0	0		0	0	0		0	0	0	
East UP	0	0	0		0	0	0		0	0	0	
NE LP	1,932	1,095	365	-43.4	0	0	0		1,932	1,095	365	-43.4
NW LP	1,351	713	299	-47.2	0	0	0		1,351	713	299	-47.2
Sag. Bay	3,571	2,402	523	-32.7	0	0	0		3,571	2,402	523	-32.7
SW LP	3,331	2,035	476	-38.9*	0	0	0		3,331	2,035	476	-38.9*
SC LP	5,381	3,769	645	-30.0*	0	0	0		5,381	3,769	645	-30.0*
SE LP	1,930	1,215	345	-37.1	0	0	0		1,930	1,215	345	-37.1
UP	0	0	0		0	0	0		0	0	0	
NLP	3,411	1,847	475	-45.8*	0	0	0		3,411	1,847	475	-45.8*
SLP	14,087	9,381	1,016	-33.4*	0	0	0		14,087	9,381	1,016	-33.4*
Statewide	17,498	11,228	1,134	-35.8*	0	0	0		17,498	11,228	1,134	-35.8*
Liberty ^c												
West UP	389	217	88	-44.2	702	411	132	-41.5*	1,090	628	158	-42.4*
East UP	35	45	40	27.8	133	32	35	-75.7*	168	77	53	-54.1
NE LP	547	529	158	-3.3	850	594	154	-30.1	1,397	1,122	221	-19.7
NW LP	1,043	795	182	-23.8	1,889	1,288	232	-31.8*	2,932	2,082	295	-29.0*
Sag. Bay	1,217	530	152	-56.4*	1,855	1,073	204	-42.1*	3,072	1,603	254	-47.8*
SW LP	406	198	85	-51.2*	631	349	114	-44.7*	1,036	547	142	-47.3*
SC LP	893	198	85	-77.9*	1,203	1,207	235	0.3	2,097	1,407	249	-32.9*
SE LP	317	185	83	-41.6	594	331	110	-44.4*	912	516	137	-43.4*
UP	424	262	96	-38.2	835	443	136	-46.9*	1,258	705	167	-44.0*
NLP	1,960	1,575	259	-19.7	3,254	2,040	289	-37.3*	5,214	3,612	388	-30.7*
SLP	2,462	860	188	-65.1*	3,769	2,802	340	-25.7*	6,231	3,665	389	-41.2*
Statewide	4,846	2,696	339	-44.4*	7,857	5,285	467	-32.7*	12,703	7,981	577	-37.2*

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^b95% confidence limit for the 2013 estimate. *P<0.005.

^c2012 estimates for the Liberty Hunt excluded disabled hunters, but 2013 estimates included results of both youth and disabled hunters.

Table 6 (continued). Number of deer harvested in Michigan by hunting season, 2012-2013.^a

Season and Area	Antlerless				Antlered Bucks				Sexes Combined			
	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013 (%)	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013
Independence ^c												
West UP	35	4	3	-87.6	6	2	2	-67.9	42	7	4	-83.7
East UP	2	0	0	-100.0	2	2	2	28.4	3	2	2	-39.2
NE LP	6	13	6	106.9	6	36	29	465.9	13	48	29	283.2*
NW LP	17	51	58	196.4	19	25	21	31.8	36	80	62	123.0
Sag. Bay	63	3	3	-94.6	45	21	21	-54.0	108	23	21	-78.4
SW LP	28	16	21	-44.3	3	42	57	1545.1	31	58	61	85.2
SC LP	11	7	4	-37.6	8	63	64	697.7	19	67	64	255.3
SE LP	0	3	3		32	4	3	-87.3	32	8	4	-76.0
UP	37	4	3	-88.1	8	4	3	-48.7	45	9	4	-80.6
NLP	28	65	58	133.2	30	61	36	102.3	58	130	68	124.8
SLP	98	28	21	-71.6	83	130	88	57.0	180	153	91	-15.0
Statewide	162	97	62	-40.1	121	195	111	61.3	283	292	127	3.1
All Seasons												
West UP	12,288	9,910	1,157	-19.3	29,013	23,652	1,675	-18.5*	41,316	33,588	2,154	-18.7*
East UP	1,194	1,415	406	18.5	6,953	5,255	786	-24.4*	8,153	6,677	938	-18.1
NE LP	25,323	26,234	1,883	3.6	30,326	29,952	1,859	-1.2	55,650	56,185	2,910	1.0
NW LP	31,100	30,845	1,949	-0.8	39,413	30,881	1,906	-21.6*	70,516	61,717	2,993	-12.5*
Sag. Bay	39,449	34,767	2,236	-11.9	37,962	34,916	2,029	-8.0	77,403	69,673	3,445	-10.0*
SW LP	26,078	23,880	1,910	-8.4	25,805	25,702	1,738	-0.4	51,878	49,579	2,910	-4.4
SC LP	41,025	35,951	2,358	-12.4*	39,224	37,933	2,141	-3.3	80,240	73,877	3,611	-7.9
SE LP	14,907	12,733	1,312	-14.6	13,944	14,765	1,337	5.9	28,848	27,498	2,154	-4.7
UP	13,482	11,325	1,226	-16.0	35,966	28,907	1,850	-19.6*	49,468	40,265	2,349	-18.6*
NLP	67,291	66,912	2,951	-0.6	79,571	70,734	2,879	-11.1*	146,863	137,632	4,542	-6.3
SLP	110,591	97,499	3,816	-11.8*	107,103	103,416	3,509	-3.4	217,672	200,896	5,900	-7.7*
Statewide	191,364	175,737	5,013	-8.2*	222,640	203,057	4,917	-8.8*	414,004	378,794	7,848	-8.5*

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^b95% confidence limit for the 2013 estimate. *P<0.005.

^c2012 estimates for the Independence Hunt included two separate disabled hunter seasons, but 2013 estimates included only one season.

Table 7. Number of deer harvested on public and private lands during all seasons combined in Michigan by management region, 2012-2013.^a

Season and Area	Antlerless				Antlered Bucks				Sexes Combined			
	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013 (%)	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013	2012 Harvest	2013 Harvest	95% CL ^b	Change from 2012 to 2013
Public Lands												
West UP	3,035	2,310	519	-23.9	9,179	7,297	916	-20.5	12,217	9,623	1,092	-21.2*
East UP	421	260	182	-38.3	2,038	1,809	457	-11.2	2,460	2,074	498	-15.7
NE LP	5,311	6,281	880	18.3	7,887	7,565	938	-4.1	13,198	13,842	1,393	4.9
NW LP	3,835	4,934	753	28.7	8,252	5,748	845	-30.3*	12,088	10,678	1,193	-11.7
Sag. Bay	3,770	4,394	783	16.6	3,732	3,896	687	4.4	7,500	8,281	1,163	10.4
SW LP	2,099	1,487	407	-29.2	1,600	1,713	450	7.0	3,698	3,199	672	-13.5
SC LP	2,665	1,975	486	-25.9	2,434	2,001	491	-17.8	5,097	3,974	753	-22.0
SE LP	1,219	1,153	388	-5.4	825	1,385	408	67.9	2,043	2,537	622	24.2
UP	3,456	2,570	550	-25.6	11,216	9,106	1,024	-18.8	14,677	11,697	1,200	-20.3*
NLP	10,828	12,875	1,239	18.9	17,642	15,199	1,352	-13.8	28,470	28,065	1,972	-1.4
SLP	8,070	7,349	986	-8.9	7,088	7,109	920	0.3	15,153	14,447	1,494	-4.7
Statewide	22,354	22,795	1,688	2.0	35,946	31,414	1,934	-12.6*	58,300	54,209	2,761	-7.0
Private Lands												
West UP	9,256	7,605	1,009	-17.8	19,842	16,352	1,382	-17.6*	29,109	23,971	1,818	-17.7*
East UP	774	1,156	363	49.4	4,917	3,445	630	-29.9*	5,695	4,605	779	-19.1
NE LP	20,016	19,965	1,642	-0.3	22,444	22,385	1,597	-0.3	42,460	42,350	2,511	-0.3
NW LP	27,266	25,916	1,783	-5.0	31,165	25,132	1,705	-19.4*	58,431	51,041	2,716	-12.6*
Sag. Bay	35,678	30,373	2,079	-14.9*	34,226	31,022	1,902	-9.4	69,898	61,389	3,216	-12.2*
SW LP	23,978	22,386	1,863	-6.6	24,200	23,991	1,678	-0.9	48,175	46,375	2,821	-3.7
SC LP	38,356	33,964	2,305	-11.4	36,784	35,934	2,081	-2.3	75,133	69,895	3,517	-7.0
SE LP	13,687	11,578	1,242	-15.4	13,117	13,380	1,271	2.0	26,802	24,959	2,041	-6.9
UP	10,029	8,760	1,073	-12.7	24,759	19,798	1,519	-20.0*	34,804	28,576	1,978	-17.9*
NLP	56,468	54,055	2,651	-4.3	61,938	55,531	2,531	-10.3*	118,405	109,577	4,036	-7.5*
SLP	102,513	90,127	3,674	-12.1*	99,997	96,314	3,381	-3.7	202,495	186,432	5,676	-7.9*
Statewide	169,010	152,942	4,690	-9.5*	186,694	171,643	4,503	-8.1*	355,704	324,585	7,279	-8.7*

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^b95% confidence limit for the 2013 estimate. *P<0.005.

Table 8. Percentage of deer hunters harvesting deer in Michigan during all seasons, 2013.^a

Sex and Area	Number of deer harvested									
	≥1 deer		≥2 deer		≥3 deer		≥4 deer		≥5 deer	
	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b
Antlerless										
West UP	11.2	1.2	1.5	0.5	0.2	0.2	0.0	0.1	0.0	0.1
East UP	5.3	1.5	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
NE LP	18.6	1.1	2.9	0.5	0.5	0.2	0.1	0.1	0.0	0.1
NW LP	20.7	1.1	2.6	0.4	0.3	0.2	0.0	0.0	0.0	0.0
Sag. Bay	25.5	1.3	5.3	0.7	0.9	0.3	0.2	0.2	0.1	0.1
SW LP	20.3	1.3	4.0	0.7	0.8	0.3	0.2	0.2	0.2	0.1
SC LP	23.7	1.2	5.6	0.7	1.5	0.4	0.3	0.2	0.1	0.1
SE LP	19.3	1.7	3.5	0.8	0.6	0.3	0.1	0.1	0.0	0.0
UP	9.8	1.0	1.3	0.4	0.2	0.1	0.0	0.1	0.0	0.1
NLP	20.4	0.8	3.1	0.3	0.4	0.1	0.1	0.0	0.0	0.0
SLP	23.4	0.7	5.2	0.4	1.1	0.2	0.3	0.1	0.1	0.1
Statewide ^d	22.1	0.5	4.5	0.3	0.9	0.1	0.2	0.1	0.1	0.0
Antlered bucks ^c										
West UP	28.7	1.7	2.5	0.6						
East UP	19.9	2.6	1.4	0.8						
NE LP	23.5	1.3	1.8	0.4						
NW LP	21.4	1.1	2.3	0.4						
Sag. Bay	28.8	1.4	3.5	0.6						
SW LP	25.1	1.4	2.5	0.5						
SC LP	29.1	1.3	3.9	0.6						
SE LP	24.5	1.9	2.9	0.7						
UP	26.7	1.4	2.3	0.5						
NLP	23.2	0.8	2.2	0.3						
SLP	28.6	0.8	3.6	0.3						
Statewide ^d	28.6	0.6	3.6	0.2						

^aExcluded people that did not hunt during the season and deer taken with DMA permits.

^b95% confidence limit.

^cThe season bag limit for antlered deer was two.

^dThe statewide estimate was derived from all hunters, including hunters that had failed to report where they hunted. In contrast, regional estimates were derived from only hunters that had reported hunting in the area.

Table 8 (continued). Percentage of deer hunters harvesting deer in Michigan during all seasons, 2013.^a

Sex and Area	Number of deer harvested									
	≥1 deer		≥2 deer		≥3 deer		≥4 deer		≥5 deer	
	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b
Sexes Combined										
West UP	37.5	1.8	5.7	0.9	0.7	0.3	0.2	0.2	0.0	0.0
East UP	23.3	2.8	3.7	1.2	0.0	0.0	0.0	0.0	0.1	0.1
NE LP	37.0	1.4	8.3	0.8	1.6	0.4	0.3	0.2	0.0	0.0
NW LP	36.9	1.3	8.9	0.8	1.4	0.3	0.2	0.1	0.2	0.2
Sag. Bay	45.2	1.5	14.1	1.1	3.7	0.6	0.9	0.3	0.2	0.2
SW LP	38.6	1.6	10.9	1.0	2.5	0.5	0.7	0.3	0.2	0.2
SC LP	44.7	1.5	13.9	1.0	3.9	0.6	1.2	0.3	0.1	0.1
SE LP	36.9	2.1	10.3	1.3	2.8	0.7	0.7	0.4	0.6	0.6
UP	34.2	1.5	5.3	0.7	0.5	0.2	0.2	0.1	0.0	0.0
NLP	38.2	0.9	9.3	0.6	1.6	0.2	0.3	0.1	0.1	0.1
SLP	43.5	0.9	13.6	0.6	3.8	0.3	1.0	0.2	0.6	0.6
Statewide ^d	43.2	0.6	12.6	0.4	3.1	0.2	0.8	0.1	0.2	0.1

^aExcluded people that did not hunt during the season and deer taken with DMA permits.

^b95% confidence limit.

^cThe season bag limit for antlered deer was two.

^dThe statewide estimate was derived from all hunters, including hunters that had failed to report where they hunted. In contrast, regional estimates were derived from only hunters that had reported hunting in the area.

Table 9. Percentage of deer hunters harvesting at least one deer in Michigan by hunting season, 2013.^a

Sex and Area	Season											
	Archery		Regular Firearm		Muzzleloader		Early Antlerless		Late Antlerless		Liberty	
	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b
Antlerless												
West UP	16.8	2.5	5.4	0.9	9.3	2.6	0.0	0.0	0.0	0.0	14.4	5.5
East UP	17.0	4.5	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	13.0	10.9
NE LP	13.4	1.6	12.2	1.0	14.2	2.6	31.0	7.4	27.3	7.6	20.0	5.4
NW LP	16.1	1.5	13.1	1.0	10.1	2.1	17.9	7.8	26.5	9.0	17.7	3.7
Sag. Bay	15.6	1.5	16.0	1.2	14.7	2.1	19.2	4.8	22.4	4.3	12.9	3.5
SW LP	11.0	1.4	13.0	1.2	9.2	1.7	13.5	4.1	13.9	3.0	10.7	4.4
SC LP	12.9	1.3	15.8	1.2	10.6	1.7	19.8	4.2	20.0	3.0	5.6	2.4
SE LP	12.2	1.8	10.9	1.6	9.3	2.2	9.8	4.1	14.9	4.0	10.0	4.4
UP	17.0	2.2	4.1	0.7	7.2	2.0	0.0	0.0	0.0	0.0	14.1	4.9
NLP	15.4	1.0	12.9	0.7	12.4	1.6	25.8	5.3	26.0	5.5	18.7	2.8
SLP	13.2	0.8	14.9	0.7	11.2	1.0	16.4	2.2	18.2	1.8	8.6	1.8
Statewide	15.4	0.6	13.2	0.4	11.3	0.8	18.3	2.1	19.1	1.7	13.4	1.6
Antlered Bucks												
West UP	15.3	2.4	26.4	1.7	7.3	2.3	0.0	0.0	0.0	0.0	27.5	7.6
East UP	10.3	3.6	18.7	2.7	9.5	4.7	0.0	0.0	0.0	0.0	9.4	9.6
NE LP	12.1	1.6	20.9	1.3	4.7	1.6	0.0	0.0	0.0	0.0	22.6	5.3
NW LP	13.8	1.4	16.7	1.1	3.7	1.3	0.0	0.0	0.0	0.0	29.0	4.5
Sag. Bay	19.2	1.7	21.9	1.4	5.5	1.4	0.0	0.0	0.0	0.0	26.4	4.5
SW LP	18.8	1.7	16.8	1.4	5.2	1.3	0.0	0.0	0.0	0.0	19.0	5.7
SC LP	21.6	1.7	20.7	1.3	5.1	1.2	0.0	0.0	0.0	0.0	34.6	5.6
SE LP	19.1	2.1	15.9	1.9	6.1	1.9	0.0	0.0	0.0	0.0	17.9	5.6
UP	14.2	2.0	24.7	1.5	7.8	2.1	0.0	0.0	0.0	0.0	24.1	6.5
NLP	14.0	1.0	18.9	0.8	4.6	1.0	0.0	0.0	0.0	0.0	24.5	3.1
SLP	20.7	1.0	20.0	0.8	5.4	0.7	0.0	0.0	0.0	0.0	28.3	3.0
Statewide	18.9	0.7	21.3	0.6	5.6	0.6	0.0	0.0	0.0	0.0	26.3	2.0

^aExcluded people that did not hunt during the season and deer taken with DMA permits.^b95% confidence limit.

Table 9 (continued). Percentage of deer hunters harvesting at least one deer in Michigan by hunting season, 2013.^a

Sex and Area	Season											
	Archery		Regular Firearm		Muzzleloader		Early Antlerless		Late Antlerless		Liberty	
	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b	Success	95% CL ^b
Sexes combined												
West UP	30.6	3.1	30.7	1.8	15.7	3.2	0.0	0.0	0.0	0.0	41.9	8.3
East UP	25.1	5.2	18.7	2.7	9.7	4.7	0.0	0.0	0.0	0.0	22.3	13.6
NE LP	24.1	2.0	30.8	1.5	18.3	2.9	31.0	7.4	27.3	7.6	42.6	6.6
NW LP	28.0	1.8	27.3	1.3	13.3	2.4	17.9	7.8	26.5	9.0	46.8	5.0
Sag. Bay	31.1	1.9	34.2	1.6	19.2	2.4	19.2	4.8	22.4	4.3	39.3	5.1
SW LP	27.1	2.0	27.1	1.6	14.4	2.1	13.5	4.1	13.9	3.0	29.6	6.7
SC LP	31.5	1.9	33.1	1.5	15.2	2.0	19.8	4.2	20.0	3.0	40.2	5.8
SE LP	28.1	2.4	24.4	2.2	14.8	2.8	9.8	4.1	14.9	4.0	27.9	6.8
UP	29.6	2.7	27.9	1.5	14.3	2.7	0.0	0.0	0.0	0.0	38.3	7.3
NLP	27.5	1.3	29.4	0.9	16.5	1.8	25.8	5.3	26.0	5.5	43.2	3.6
SLP	30.4	1.1	31.5	0.9	16.1	1.2	16.4	2.2	18.2	1.8	36.9	3.3
Statewide	31.0	0.8	31.6	0.6	16.3	0.9	18.3	2.1	19.1	1.7	39.8	2.3

^aExcluded people that did not hunt during the season and deer taken with DMA permits.

^b95% confidence limit.

Table 9 (Continued). Percentage of deer hunters harvesting at least one deer in Michigan by hunting season, 2013.^a

Sex and Area	Season			
	Independence		All Seasons	
	Success	95% CL ^b	Success	95% CL ^b
Antlerless				
West UP	6.0	4.8	11.2	1.2
East UP	0.0	0.0	5.3	1.5
NE LP	4.7	3.1	18.6	1.1
NW LP	15.4	16.0	20.7	1.1
Sag. Bay	1.5	1.6	25.5	1.3
SW LP	3.9	5.7	20.3	1.3
SC LP	2.0	1.6	23.7	1.2
SE LP	1.5	1.6	19.3	1.7
UP	3.9	3.1	9.8	1.0
NLP	10.0	8.6	20.4	0.8
SLP	2.4	2.0	23.4	0.7
Statewide	5.1	3.3	22.1	0.5
Antlered Bucks				
West UP	2.3	3.2	28.7	1.7
East UP	4.6	6.3	19.9	2.6
NE LP	11.0	10.8	23.5	1.3
NW LP	6.4	6.5	21.4	1.1
Sag. Bay	7.8	9.4	28.8	1.4
SW LP	9.9	15.0	25.1	1.4
SC LP	15.4	17.0	29.1	1.3
SE LP	1.5	1.6	24.5	1.9
UP	3.1	3.0	26.7	1.4
NLP	7.8	5.5	23.2	0.8
SLP	9.9	7.6	28.6	0.8
Statewide	10.3	5.6	28.6	0.6

^aExcluded people that did not hunt during the season and deer taken with DMA permits.

^b95% confidence limit.

Table 9 (continued). Percentage of deer hunters harvesting at least one deer in Michigan by hunting season, 2013.^a

Sex and Area	Season			
	Independence		All Seasons	
	Success	95% CL ^b	Success	95% CL ^b
Sexes combined				
West UP	8.3	6.0	37.5	1.8
East UP	4.6	6.3	23.3	2.8
NE LP	15.7	11.8	37.0	1.4
NW LP	20.8	16.7	36.9	1.3
Sag. Bay	9.3	9.7	45.2	1.5
SW LP	13.8	15.8	38.6	1.6
SC LP	17.4	17.1	44.7	1.5
SE LP	3.0	2.6	36.9	2.1
UP	7.0	4.5	34.2	1.5
NLP	17.2	10.0	38.2	0.9
SLP	12.3	7.8	43.5	0.9
Statewide	15.2	6.3	43.2	0.6

^aExcluded people that did not hunt during the season and deer taken with DMA permits.

^b95% confidence limit.

Table 10. Level of satisfaction and dissatisfaction with the number of deer seen and number of antlered deer (bucks) seen among Michigan deer hunters, 2012-2013.

Criteria and area	Satisfied hunters (%) ^a				Dissatisfied hunters (%) ^b			
	2012	2013	95% CL ^c	Difference from 2012 to 2013 (%)	2012	2013	95% CL ^c	Difference from 2012 to 2013 (%)
Number of deer seen								
West UP	43	26	2	-17*	41	62	2	21*
East UP	36	26	3	-9*	49	58	4	9*
NE LP	35	35	2	0	50	49	2	-1
NW LP	34	35	1	1	50	50	2	0
Sag. Bay	42	37	2	-5*	42	48	2	6*
SW LP	28	28	2	0	58	57	2	0
SC LP	37	36	2	-1	49	49	2	0
SE LP	40	37	2	-2	42	45	2	3
UP	41	26	2	-15*	43	61	2	18*
NLP	34	34	1	0	50	50	1	0
SLP	37	35	1	-2*	48	50	1	2*
Statewide	36	33	1	-3*	48	51	1	3*
Number of antlered deer (bucks) seen								
West UP	30	18	1	-12*	53	68	2	15*
East UP	25	15	3	-10*	58	71	3	12*
NE LP	23	21	1	-2	61	61	2	0
NW LP	23	22	1	0	60	61	1	0
Sag. Bay	28	24	1	-4*	54	59	2	5*
SW LP	20	20	1	0	64	63	2	-1
SC LP	28	26	1	-2	57	56	2	-1
SE LP	26	23	2	-3	53	58	2	5*
UP	29	17	1	-12*	54	69	2	14*
NLP	22	21	1	-1	61	61	1	1
SLP	26	24	1	-2*	57	58	1	2
Statewide	25	22	1	-3*	58	61	1	3*

^aIncluded hunters who were "very satisfied" or "somewhat satisfied."

^bIncluded hunters who were "somewhat dissatisfied" or "strongly dissatisfied."

^c95% confidence limit for the 2013 estimate.

*P<0.005.

Table 11. Level of satisfaction and dissatisfaction with overall deer hunting experience and number of deer harvested among Michigan deer hunters, 2012-2013.

Criteria and area	Satisfied hunters (%) ^a				Dissatisfied hunters (%) ^b			
	2012	2013	95% CL ^c	Difference from 2012 to 2013 (%)	2012	2013	95% CL ^c	Difference from 2012 to 2013 (%)
Overall deer hunting experience								
West UP	54	40	2	-14*	25	40	2	15*
East UP	51	43	4	-8*	27	36	4	9*
NE LP	47	49	2	1	31	29	1	-1
NW LP	46	45	1	-1	31	31	1	1
Sag. Bay	50	46	2	-4*	28	31	2	3*
SW LP	38	40	2	1	39	38	2	-2
SC LP	48	47	2	-1	31	31	1	-1
SE LP	52	49	2	-3	26	28	2	3
UP	53	41	2	-13*	25	39	2	14*
NLP	47	46	1	-1	31	31	1	0
SLP	47	45	1	-1	32	32	1	0
Statewide	47	45	1	-3*	30	33	1	2
Number of deer harvested								
West UP	38	29	2	-9*	28	37	2	9*
East UP	28	23	3	-6	31	40	4	9*
NE LP	29	29	1	0	35	34	2	-1
NW LP	30	27	1	-3*	34	35	1	0
Sag. Bay	36	33	2	-3*	31	32	2	1
SW LP	26	26	2	0	40	38	2	-1
SC LP	33	31	1	-2	35	33	2	-2
SE LP	31	30	2	-1	32	31	2	-1
UP	36	27	2	-8*	29	38	2	9*
NLP	30	28	1	-2	34	34	1	0
SLP	32	30	1	-2	35	34	1	-1
Statewide	32	29	1	-3*	34	35	1	1

^aIncluded hunters who were "very satisfied" or "somewhat satisfied."

^bIncluded hunters who were "somewhat dissatisfied" or "strongly dissatisfied."

^c95% confidence limit for the 2013 estimate.

*P<0.005.

Table 12. Level of support and opposition for the antler point restrictions in the Upper Peninsula among Michigan deer hunters, 2012-2013.

Preferred hunt area	Hunters supporting (%) ^a				Hunters opposing (%) ^b			
	2012	2013	95% CL ^c	Difference from 2012 to 2013 (%)	2012	2013	95% CL ^c	Difference from 2012 to 2013 (%)
West UP	58	60	2	2	31	29	2	-1
East UP	59	57	4	-2	31	32	3	0
NE LP	50	50	2	0	21	23	1	3
NW LP	54	51	2	-3	19	23	1	4*
Sag. Bay	54	51	2	-3*	17	22	1	5*
SW LP	55	55	2	-1	14	17	1	3*
SC LP	55	53	2	-2	14	17	1	3*
SE LP	58	56	2	-2	16	18	2	2
UP	58	59	2	1	31	30	2	-1
NLP	52	51	1	-2	19	23	1	3
SLP	55	53	1	-2	15	18	1	3
Statewide	55	53	1	-2	19	22	1	3

^aIncluded hunters who "strongly supported" or "supported" antler point restrictions in the UP.

^bIncluded hunters who "opposed" or "strongly opposed" antler point restrictions in the UP.

^c95% confidence limit for the 2013 estimate.

*P<0.005.

Table 13. Level of support and opposition for the antler point restrictions in DMU 487 among Michigan deer hunters, 2012-2013.^a

Preferred hunt area	Hunters supporting (%) ^b				Hunters opposing (%) ^c			
	2012	2013	95% CL ^d	Difference from 2012 to 2013 (%)	2012	2013	95% CL ^d	Difference from 2012 to 2013 (%)
West UP	36	35	2	-1	17	17	1	0
East UP	40	40	4	0	24	22	3	-2
NE LP	49	51	2	2	26	26	1	0
NW LP	46	45	2	-1	17	21	1	3*
Sag. Bay	46	44	2	-2	17	23	1	6*
SW LP	46	46	2	0	12	16	1	4*
SC LP	45	46	2	1	13	17	1	4*
SE LP	49	48	2	-1	18	20	2	1
UP	37	36	2	-1	19	18	1	-1
NLP	47	47	1	0	21	23	1	2*
SLP	46	46	1	0	14	19	1	4*
Statewide	45	45	1	0	18	20	1	3*

^aNew antler point restrictions were adopted in 2010 for the taking of antlered deer (bucks) in DMU 487. Under this new regulation, the regular buck tag of a combination deer license could only be used to tag a buck with at least three antler points on one side. The restricted tag could only be used on a buck with at least four points on one side. Hunters who chose not to purchase the combination tag were restricted to one buck (with no additional point restrictions) in the UP, all seasons combined, even if they purchased an archery and firearms license. In addition, hunters in DMU 487 could use a firearm license or one or both combination license tags for antlerless deer during the firearm or muzzleloader seasons. DMU 487 included Alcona, Alpena, Iosco, Montmorency, Oscoda, and Presque Isle counties.

^bGroup supporting restrictions included hunters reporting they "strongly supported" or "supported."

^cGroup opposing restrictions included hunters reporting they "opposed" or "strongly opposed."

^d95% confidence limit. Excluded people that did not hunt.

*P<0.005.

Table 14. Estimated proportion and number of archers that used a crossbow during 2013 archery season in Michigan, summarized by region.

Region	Archers using a crossbow during archery season			
	%	95% CL	Total	95% CL
UP	54.0	3.2	14,586	1,249
NLP	54.2	1.6	58,311	2,393
SLP	46.5	1.3	76,761	2,644
Unknown ^a	45.0	3.0	13,070	1,174
Statewide	49.5	0.9	162,728	3,641

^aRegion could not be determined when hunter did not report where they hunted or when hunter reported hunting in more than one region.

Table 15. Estimated hunter success of archers hunting with a crossbow during 2013 archery season in Michigan, summarized by type of deer and region.

Region	Antlerless		Antlered Bucks		Sexes Combined	
	% ^a	95% CL	% ^a	95% CL	% ^a	95% CL
UP	17.8	3.3	14.8	3.1	30.9	4.0
NLP	18.8	1.7	15.1	1.5	31.8	2.0
SLP	14.1	1.3	22.2	1.5	32.7	1.7
Unknown ^b	18.6	3.5	17.2	3.4	31.2	4.2
Statewide	16.5	1.0	18.6	1.0	32.1	1.2

^aPercentage of crossbow hunters harvesting at least one deer.

^bRegion could not be determined when hunter did not report where they hunted or when hunter reported hunting in more than one region.

Table 16. Estimated number of deer harvested by archers with a crossbow during 2013 archery season in Michigan, summarized by type of deer and region.

Region	Antlerless		Antlered Bucks		Sexes Combined	
	No.	95% CL	No.	95% CL	No.	95% CL
UP	2,667	564	2,153	495	4,820	783
NLP	11,359	1,163	8,632	962	19,991	1,590
SLP	11,691	1,219	17,286	1,383	28,977	1,985
Unknown ^a	2,680	605	2,305	515	4,985	888
Statewide	28,397	1,857	30,375	1,807	58,772	2,747

^aRegion could not be determined when hunter did not report where they hunted or when hunter reported hunting in more than one region.

Appendix A. Antlerless deer hunting license quotas, number of antlerless licenses sold, and number of hunters purchasing an antlerless license in Michigan during 2013, summarized by Deer Management Unit and license type (public and private lands).

DMU ^a	DMU Name	Public land			Private land		
		License quota	Licenses sold ^b	License buyers ^c	License quota	Licenses sold ^{b,c}	License buyers ^c
001	Alcona County ^d	5,000	2,881	2,431	0	0	0
003	Allegan County	900	762	731	8,000	7,642	6,260
004	Alpena County ^d	2,000	650	534	0	0	0
005	Antrim County	200	190	190	5,200	4,834	3,421
006	Arenac County	500	433	433	7,000	4,623	3,602
007	Big Bay Unit	0	0	0	0	0	0
009	Bay County	200	158	140	3,000	2,690	2,146
010	Benzie County	600	592	587	400	375	375
012	Branch County	100	72	62	6,000	5,871	4,363
015	Charlevoix County	200	187	180	3,600	3,268	2,296
016	Cheboygan County	400	346	346	700	585	585
017	Sault Ste. Marie Unit	0	0	0	0	0	0
018	Clare County	900	787	787	8,000	7,541	5,652
020	Crawford County	800	829	827	1,000	842	839
021	Manistique Unit	0	0	0	0	0	0
022	Iron Mountain Unit	1,000	847	847	3,500	3,251	2,424
024	Emmet County	200	190	190	1,700	1,520	1,212
025	Genesee County	0	0	0	8,500	5,754	4,870
026	Gladwin County	1,200	1,059	1,059	8,000	7,555	5,599
027	Watersmeet Unit	0	0	0	0	0	0
028	Grand Traverse County	500	489	489	400	380	380
030	Hillsdale County	400	316	270	12,000	7,922	6,130
031	Nisula Unit	0	0	0	0	0	0
034	Ionia County	400	337	296	11,000	6,975	5,488
035	Iosco County ^d	1,000	822	796	0	0	0
036	Amasa/Michigamme Unit	0	0	0	0	0	0
037	Isabella County	100	85	80	11,000	8,748	6,468
038	Jackson County	1,600	1,282	1,115	17,000	10,628	8,310

^aSee Figure 2 for the locations of DMUs.

^bNumber of licenses sold could exceed the quota because junior licenses do not count towards the quota.

^cNumber of license buyers does not add up to statewide total because hunters could purchase licenses in more than one DMU.

^dAlso part of DMU 487.

^eSpecial deer hunts on public land. Licenses for these DMUs were available on a local basis.

Appendix A (continued). Antlerless deer hunting license quotas, number of antlerless licenses sold, and number of hunters purchasing an antlerless license in Michigan during 2013, summarized by Deer Management Unit and license type (public and private lands).

DMU ^a	DMU Name	Public land			Private land		
		License quota	Licenses sold ^b	License buyers ^c	License quota	Licenses sold ^{b,c}	License buyers ^c
040	Kalkaska County	400	422	422	200	189	188
042	Keweenaw Unit	0	0	0	0	0	0
043	Lake County	200	302	302	3,000	2,610	2,609
044	Lapeer County	2,000	1,720	1,560	15,000	9,784	7,800
045	Leelanau County	200	206	205	1,400	1,182	1,074
046	Lenawee County	400	332	270	9,000	6,276	5,002
047	Livingston County	2,000	1,608	1,401	15,000	7,280	5,888
048	Newberry Unit	0	0	0	0	0	0
050	Macomb County	200	153	141	4,000	2,835	2,377
051	Manistee County	500	559	557	3,000	2,595	2,593
053	Mason County	400	490	490	5,200	4,585	3,878
055	Menominee Unit	2,000	1,766	1,298	9,000	5,776	4,312
056	Midland County	1,500	1,269	1,139	7,500	6,314	4,920
057	Missaukee County	600	584	584	3,200	2,839	2,568
058	Monroe County	100	107	106	1,000	978	704
060	Montmorency County ^d	5,000	4,093	3,401	0	0	0
063	Oakland County	2,500	2,074	1,740	7,000	4,736	3,850
065	Ogemaw County	1,000	882	881	7,000	6,427	4,798
066	Ontonagon County	0	0	0	0	0	0
067	Osceola County	100	128	128	5,300	4,752	4,061
068	Oscoda County ^d	5,000	4,415	3,547	0	0	0
069	Otsego County	300	292	292	600	508	508
071	Presque Isle County ^d	3,000	2,028	1,664	0	0	0
072	Roscommon County	500	493	492	1,500	1,305	1,107
073	Saginaw County	200	169	169	6,500	6,311	4,926
074	St. Clair County	700	557	501	9,500	7,969	6,490
081	Washtenaw County	1,500	1,225	1,086	15,000	6,783	5,380
082	Wayne County	100	75	64	1,200	1,133	944

^aSee Figure 2 for the locations of DMUs.

^bNumber of licenses sold could exceed the quota because junior licenses do not count towards the quota.

^cNumber of license buyers does not add up to statewide total because hunters could purchase licenses in more than one DMU.

^dAlso part of DMU 487.

^eSpecial deer hunts on public land. Licenses for these DMUs were available on a local basis.

Appendix A (continued). Antlerless deer hunting license quotas, number of antlerless licenses sold, and number of hunters purchasing an antlerless license in Michigan during 2013, summarized by Deer Management Unit and license type (public and private lands).

DMU ^a	DMU Name	Public land			Private land		
		License quota	Licenses sold ^b	License buyers ^c	License quota	Licenses sold ^{b,c}	License buyers ^c
083	Wexford County	1,000	970	969	3,700	3,325	2,673
115	Beaver Island	300	148	128	400	222	183
117	Drummond Island	0	0	0	0	0	0
121	Bay De Noc Unit	400	332	308	800	714	589
122	Norway Unit	200	165	165	1,500	1,118	912
127	Ironwood Unit	0	0	0	0	0	0
131	Twin Lakes Unit	0	0	0	0	0	0
135	Tawas Unit ^d	200	144	119	0	0	0
145	North Manitou Island ^e	0	0	0	0	0	0
149	Round/Bois Blanc Island	100	79	66	100	86	69
152	Gwinn Unit	0	0	0	0	0	0
155	Gladstone Unit	400	333	309	3,000	2,064	1,660
174	St. Clair Flats	132	132	101	300	115	94
245	South Fox Island ^e	0	0	0	0	0	0
249	Trout Lake Unit	0	0	0	0	0	0
252	Rock Unit	0	0	0	0	0	0
255	LaBranche Unit	500	448	446	1,000	928	718
273	Shiawassee Unit ^e	592	592	592	0	0	0
308	Bellevue Unit	2,000	1,656	1,457	32,000	20,289	16,101
311	Keeler Unit	700	569	499	14,000	13,123	10,517
319	Laingsburg Unit	3,400	2,885	2,200	40,000	26,077	19,862
332	Greenleaf Unit	6,200	5,284	4,164	42,000	26,383	19,947
339	Vicksburg Unit	900	749	667	11,000	8,944	6,943
341	Sparta Unit	1,350	1,132	998	22,500	17,415	14,036
349	Engadine Unit	0	0	0	0	0	0
354	Lakeview Unit	1,200	983	943	26,000	20,643	15,441
361	Fremont Unit	400	533	532	9,000	8,359	7,731
452	Core Area ^d	2,000	1,774	1,505	0	0	0
487	Northern Multi-County	0	0	0	30,000	25,901	20,234
NA	Deer Management Assistance Permits	NA	NA	NA	NA	8,981	780
NA	Managed Deer Hunt Permits ^e	NA	185	137	NA	NA	NA

^aSee Figure 2 for the locations of DMUs.

^bNumber of licenses sold could exceed the quota because junior licenses do not count towards the quota.

^cNumber of license buyers does not add up to statewide total because hunters could purchase licenses in more than one DMU.

^dAlso part of DMU 487.

^eSpecial deer hunts on public land. Licenses for these DMUs were available on a local basis.

Appendix B. Estimated number of deer hunters, hunting effort, and deer harvested in Michigan during 2013, summarized by Deer Management Unit.

DMU ^d	Hunters ^{b,c}		Hunting effort (days) ^b		Deer harvested (all seasons combined) ^a					
	No.	95% CL ^e	No.	95% CL	Antlerless		Antlered bucks		Sexes combined	
					No.	95% CL	No.	95% CL	No.	95% CL
001	7,142	872	61,246	11,248	1,768	511	1,639	444	3,407	772
003	13,522	1,177	196,919	23,665	2,463	560	2,299	527	4,762	814
004	6,105	806	56,063	11,016	1,392	422	1,703	417	3,095	652
005	7,167	870	70,010	12,825	1,889	508	1,378	401	3,267	743
006	8,764	959	112,288	17,512	2,058	531	2,358	525	4,416	847
007	8,355	954	92,788	14,372	381	193	2,290	524	2,671	570
009	5,032	723	63,963	13,556	1,359	446	1,104	355	2,463	644
010	5,381	764	60,621	12,265	936	316	975	355	1,911	496
012	6,736	836	82,288	15,283	2,272	648	2,288	516	4,560	943
015	4,962	720	55,865	12,307	1,328	479	1,147	371	2,475	616
016	7,906	922	81,959	14,210	908	300	2,104	486	3,012	603
017	6,382	836	68,463	13,356	515	247	1,268	382	1,783	482
018	15,255	1,269	181,028	22,226	3,780	734	3,879	687	7,659	1,144
020	9,415	1,008	85,342	13,587	1,532	426	1,734	456	3,266	684
021	8,539	958	83,941	13,669	318	176	1,979	476	2,297	533
022	12,299	1,149	120,556	15,877	2,265	613	3,450	620	5,715	926
024	4,914	715	55,050	12,288	967	316	982	329	1,949	497
025	10,363	1,029	145,203	20,637	1,925	477	2,639	574	4,564	836
026	15,374	1,267	177,514	21,721	4,035	738	3,775	669	7,810	1,084
027	3,084	583	27,786	7,211	272	189	968	336	1,240	394
028	7,286	879	95,455	16,130	1,381	371	1,216	376	2,597	587
030	9,601	1,000	128,400	19,620	2,892	680	2,673	541	5,565	988
031	4,508	699	35,878	7,230	202	134	1,235	364	1,437	396
034	10,782	1,052	141,426	20,888	2,600	612	2,934	594	5,534	966
035	9,993	1,033	99,946	14,174	1,658	513	2,158	510	3,816	777
036	3,401	610	30,880	7,256	153	128	971	325	1,124	349
037	10,902	1,047	128,958	17,617	3,394	685	3,905	664	7,299	1,094
038	14,327	1,214	194,156	22,617	3,419	689	4,313	731	7,732	1,139

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^bColumn totals for hunting effort and harvest may not equal regional and statewide totals because of rounding errors.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one DMU.

^dSee Figure 2 for the locations of DMUs.

^e95% confidence limit.

^fEstimates for DMU 273 were combined with estimates for DMU 073.

Appendix B (continued). Estimated number of deer hunters, hunting effort, and deer harvested in Michigan during 2013, summarized by Deer Management Unit.

DMU ^d	Hunters ^{b,c}		Hunting effort (days) ^b		Deer harvested (all seasons combined) ^a					
	No.	95% CL ^e	No.	95% CL	Antlerless		Antlered bucks		Sexes combined	
					No.	95% CL	No.	95% CL	No.	95% CL
040	9,097	988	84,436	13,303	1,099	367	1,076	345	2,175	553
042	2,278	501	22,731	6,835	107	101	596	286	703	303
043	15,407	1,274	144,678	16,918	2,892	568	2,395	513	5,287	812
044	14,817	1,226	207,118	24,748	3,791	724	4,063	702	7,854	1,140
045	5,030	734	53,909	11,232	884	314	1,045	363	1,929	533
046	8,019	911	107,771	16,832	2,056	536	2,396	528	4,452	882
047	12,324	1,127	158,525	20,723	3,064	672	3,211	626	6,275	1,007
048	6,110	815	54,871	11,493	399	245	1,086	369	1,485	472
050	4,340	672	58,894	12,972	1,054	366	1,223	407	2,277	628
051	10,529	1,054	95,467	13,526	2,358	501	1,875	479	4,233	731
053	11,684	1,103	132,900	18,363	3,628	690	3,040	609	6,668	1,050
055	12,893	1,170	131,814	16,626	2,685	601	4,111	695	6,796	1,016
056	12,572	1,143	172,979	23,159	3,549	729	3,287	599	6,836	1,070
057	10,136	1,033	103,186	15,139	2,367	532	1,930	472	4,297	793
058	4,038	649	60,664	13,689	252	150	985	359	1,237	398
060	8,897	979	70,032	11,068	1,778	482	1,991	474	3,769	772
063	10,914	1,071	129,992	18,693	2,282	554	2,362	540	4,644	913
065	13,051	1,172	134,605	17,913	3,037	646	2,754	547	5,791	946
066	4,351	690	36,667	7,392	93	97	1,567	427	1,660	438
067	12,930	1,163	138,722	17,934	3,109	690	3,445	624	6,554	1,016
068	9,269	999	71,049	11,245	1,766	467	1,343	369	3,109	636
069	6,747	848	67,664	12,536	686	252	2,022	505	2,708	598
071	9,369	1,001	82,033	12,472	2,532	622	2,796	563	5,328	927
072	11,888	1,131	106,267	15,169	1,061	341	2,533	548	3,594	708
073 ^f	10,335	1,023	140,334	19,473	2,436	521	3,206	614	5,642	910
074	12,213	1,112	187,040	23,331	3,024	664	3,073	564	6,097	1,037
081	10,707	1,051	157,175	21,982	2,933	676	3,258	616	6,191	1,025
082	1,585	412	23,275	8,341	247	159	514	231	761	330

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^bColumn totals for hunting effort and harvest may not equal regional and statewide totals because of rounding errors.

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^dSee Figure 2 for the locations of DMUs.

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DMU ^d	Hunters ^{b,c}		Hunting effort (days) ^b		Deer harvested (all seasons combined) ^a					
	No.	95% CL ^e	No.	95% CL	Antlerless		Antlered bucks		Sexes combined	
					No.	95% CL	No.	95% CL	No.	95% CL
083	11,319	1,086	112,144	16,435	2,435	533	1,356	377	3,791	693
115	251	168	1,340	929	61	81	126	140	187	180
117	796	298	5,310	2,496	90	99	106	101	196	163
121	3,242	595	32,797	8,586	619	245	833	313	1,452	428
122	1,471	402	13,154	4,660	306	198	374	224	680	329
127	1,633	421	15,070	5,573	33	57	258	163	291	172
131	3,355	604	34,013	8,098	144	118	1,167	358	1,311	385
135	172	133	1,674	1,637	43	61	4	0	47	61
145	0	0	0	0	0	0	0	0	0	0
149	323	188	2,229	1,509	60	79	92	128	152	150
152	3,553	623	37,395	8,459	223	172	962	346	1,185	403
155	4,272	681	54,394	12,182	901	348	1,180	361	2,081	551
174	166	134	2,399	2,746	131	182	30	57	161	236
245	0	0	0	0	0	0	0	0	0	0
249	5,953	804	48,671	9,628	203	141	1,381	393	1,584	433
252	1,392	390	15,933	6,976	62	81	257	155	319	175
255	3,618	627	38,134	8,722	758	317	812	308	1,570	483
273 ^f	0	0	0	0	0	0	0	0	0	0
308	29,173	1,716	404,279	33,195	7,484	1,003	8,399	996	15,883	1,577
311	16,734	1,309	266,936	29,084	4,364	808	4,788	748	9,152	1,279
319	37,301	1,908	500,131	37,797	11,739	1,344	12,153	1,213	23,892	2,071
332	40,267	1,976	518,863	37,286	14,360	1,475	13,683	1,262	28,043	2,249
339	12,799	1,157	187,307	23,963	3,516	754	3,365	627	6,881	1,135
341	28,289	1,675	413,810	35,634	6,668	1,031	7,050	899	13,718	1,530
349	1,480	403	12,359	5,043	41	60	371	212	412	235
354	29,663	1,710	344,438	29,905	8,109	1,117	9,236	1,037	17,345	1,700
361	34,310	1,855	407,621	32,155	6,735	911	9,159	1,023	15,894	1,516
452	11,549	1,105	108,046	14,533	3,431	674	3,384	604	6,815	1,014

^aHarvest estimates do not include deer taken with DMA permits. An additional 6,508 deer were taken with these permits.

^bColumn totals for hunting effort and harvest may not equal regional and statewide totals because of rounding errors.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one DMU.

^dSee Figure 2 for the locations of DMUs.

^e95% confidence limit.

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Minnesota Deer Status Report

2014 Midwest Deer & Wild Turkey Study Group

YMCA Trout Lodge, Potosi, MO

Brian Haroldson and Gino D'Angelo

Season Framework

Firearm: Hunters must select between 2 season options: (1) The statewide firearm season begins on the Saturday nearest 6 November and runs for 16 days in forested regions with abundant public land [100-level deer management units (DMUs) in northeast Minnesota], and 9 days in agricultural regions dominated by private land [200/300-level DMUs in southern and western Minnesota]; (2) The 9-day, late season in southeast Minnesota (300 level DMUs) begins 2 weeks after the statewide opener. In agricultural regions, hunters are restricted to shotguns with a single slug, whereas rifles and shotguns are authorized in forested areas. Muzzleloaders, handguns, and crossbows are allowed statewide during either season. Annually, 1 of 5 harvest strategies (bucks-only, lottery, hunter choice, managed, intensive) are implemented within each DMU ($n = 129$), based upon estimated deer density in relation to population goal. In general, deer populations are below goal in bucks-only and lottery DMUs, at goal or exceed goal by <10% in hunter choice DMUs, exceed goal by 10-20% in managed DMUs, and exceed goal by >20% in intensive DMUs. Bag limits are 1, 1, 1, 2, and 5 deer in each DMU category, respectively. A regular firearm license (\$30 resident, \$165 non-resident) is valid for bucks-only or deer of either sex, depending upon the DMU harvest strategy. In bucks-only DMU's, all hunters are restricted to legal bucks (≥ 3 inch antler) only. No antlerless deer may be taken regardless of license type. In lottery DMUs, hunters interested in pursuing antlerless deer are required to apply for either-sex permits (\$1 issuing fee) through a lottery drawing. Unsuccessful applicants in the drawing are restricted to legal bucks only. Firearm hunters who hunt in hunter choice, managed, or intensive DMUs may tag a deer of either sex using their regular license. In addition, hunters in managed DMUs may purchase 1 bonus permit (\$15 resident, \$80 non-resident) to take a second, antlerless-only deer. Hunters in intensive DMUs may purchase up to 4 bonus permits and tag up to 4 additional antlerless deer. Bonus permits are issued over-the-counter. In intensive DMUs where deer populations have not decreased following several years of intensive harvest, a 4-day October antlerless season is offered. To participate, hunters must purchase an early-season antlerless permit (\$7.50 resident, \$40 non-resident) and a firearm or muzzleloader license. Bag limit is 2 deer, which does not count against the statewide bag limit. Finally, youth hunters (ages 10-12, \$0 resident or non-resident; ages 13-17, \$5 resident or non-resident) may take a deer of either sex statewide, excluding bucks-only DMUs, without a permit.

Muzzleloader: The 16-day muzzleloader season begins the Saturday after Thanksgiving. Hunters (\$30 resident, \$165 non-resident, \$0/\$5 youth) may take 1 deer of either sex in hunter choice, managed, or intensive DMUs, and may purchase bonus permits for taking additional antlerless deer in managed/intensive areas. In bucks-only DMU's, hunters are restricted to legal bucks only. In lottery DMUs, hunters interested in pursuing antlerless deer are required to apply for antlerless permits through a lottery drawing. Unsuccessful applicants in the drawing are restricted to legal bucks only. Smooth-bored and rifled muzzleloaders must be at least .45 caliber and .40 caliber, respectively. Scopes and breech-loading weapons are not legal during this season. There are no restrictions on ignition systems, bullet types, etc.

Archery: The statewide archery season runs from the Saturday nearest 16 September through 31 December. Archers (\$30 resident, \$165 non-resident, \$0/\$5 youth) may take 1 deer of either sex, statewide, except in bucks-only DMU's. In managed and intensive DMUs, archers may purchase bonus permits for taking additional antlerless deer. Archers may continue to hunt during the firearm and muzzleloader seasons. Crossbows are allowed for hunters ≥ 60 years of age and by permit for disabled hunters.

General: For all deer seasons, resident and non-resident youth hunters (ages 10-17) under direct supervision of a licensed parent or guardian may hunt without a firearm safety certificate for 2 license years, but must obtain all applicable licenses prior to hunting. Shooting hours for all seasons are 30 minutes before sunrise to 30 minutes after sunset. Use of bait is prohibited. Regardless of area or season hunted, only 1 legal buck is allowed per calendar year. Registration is mandatory within 48 hours of harvest, prior to processing, and may be completed by telephone, internet, or at walk-in registration stations. For telephone / internet registration, hunters receive a confirmation number to be written on the license. At walk-in registration stations, hunters are given a possession tag to attach to the carcass. Deer taken in CWD surveillance areas must be registered at a designated CWD registration station.

Population Trends

In spring 2014, approximately 60% of DMUs throughout the state were at or near target goal ranges established through the public engagement process. Thirty-three percent of DMUs were below goal and 7% were above goal. During the winter of 2013-2014, the Winter Severity Index was above average throughout the northern half of Minnesota with northeast DMUs experiencing severe winter conditions. Some over-winter mortality of fawns likely occurred in the forest zone. However, winter weather did not impact most deer populations throughout the forest transition zone or agricultural DMUs. Over the next 2 years, DNR will be devoting significant resources revisiting deer population goals through a public process throughout three-quarters of the state. The new process emphasizes collecting survey data from hunters and landowners as well as public input (mail surveys, online surveys, etc.) prior to convening stakeholder advisory teams selected to represent the diversity of perspectives related to deer management. Similar to the previous goal-setting process, stakeholder teams will provide DNR direction regarding deer population goals in each DMU. MNDNR anticipates that stakeholder teams will request stabilization or increases to deer populations in most DMUs.

2013 Season Summary

In 2013, hunters registered 172,781 deer (Table 1), down 6% from 2012. This is the 3rd consecutive year of decline and lowest harvest since 1998. This drop in harvest was unexpected, given the slightly more aggressive antlerless harvest strategy in 2013. Thirty percent of DMUs were designated as 'managed' or 'intensive' in 2013, compared to 24% in 2012. In addition, sale of bonus tags increased 9% in 2013. However, hunting conditions during the 1st and 2nd weekend of the firearm season were less than ideal, and likely hampered deer harvest. High winds occurred during the opening weekend followed by both wind and rain during the 2nd weekend. Also, about 25% of the corn crop was still standing in some areas of the state at the start of the firearm season, although harvest was near completion (87%) statewide. On average, 75% of the corn is harvested by opening day of the firearm season. Overall, firearm, muzzleloader, and archery kill decreased 6%, 8%, and 10%, respectively, in 2013. Firearm antlerless harvest

decreased 4% and firearm antlered harvest decreased 7%. Antlerless deer comprised 47% of the firearm harvest, below recent trends of 50-59% since 2003. Firearm hunters account for 84% of total harvest, while archers and muzzleloader hunters account for 12% and 4%, respectively. Firearm and archery license sales were stable, while muzzleloader license sales decreased 12% (Table 1). During 2013, DMUs were partitioned into 58 lottery areas, 32 hunter choice areas, 30 managed areas, and 9 intensive areas. An early antlerless season was held in portions of 2 DMUs in 2013. A complete harvest breakdown by weapon type is presented in Table 1.

2014 Season Outlook

Based upon winter severity and public concern about current deer densities, harvest strategies will be conservative in 2014 compared to recent years. The projected harvest is 125,000 deer, which will be the lowest harvest in over 3 decades. Simulation modeling indicates populations are at or below density goals throughout much of the forest zone. Winter conditions were severe to moderately-severe throughout this region for a 2nd consecutive year. Harvest strategies in the forest zone during 2014 will be bucks-only or lottery to protect more antlerless deer. Deer numbers remain above goal in several DMUs in the forest transition zone north of the Twin Cities metropolitan area. Despite recommended harvest strategies of hunter choice and managed throughout the majority of the transition zone, a more conservative approach (primarily lottery and hunter choice) is being implemented by MNDNR administration. Deer populations remain at or below goal throughout most agricultural DMUs. Winter conditions were mild throughout much of the region in 2014 and few complaints were received about deer damage. These units will remain as lottery or hunter choice. Statewide, DMUs will be partitioned into 14 bucks-only units, 69 lottery units, 38 hunter choice units, 3 managed units, and 4 intensive units. An early antlerless season will be offered in portions of 2 DMUs in southeast Minnesota to address localized deer damage to agricultural crops.

2014 Regulation Changes

Bucks-Only DMUs: A bucks-only harvest strategy has been implemented in several northern DMUs. No antlerless deer may be taken in these areas by any hunters during any season, including youth, disabled, and archery hunters.

Early Antlerless Season: Portions of 2 DMUs in southeast Minnesota will be open to a 4-day early antlerless season to address localized deer damage issues to agricultural crops. This season is considered annually when formulating deer management recommendations.

Crossbows: Licensed hunters age 60 or over may use crossbows during the regular archery season.

CWD Surveillance: After 3 years of monitoring and aggressive management, no additional cases of CWD were detected in the CWD Management Zone (DMU 602). Disease surveillance has been discontinued in this area and DMU 602 boundaries have reverted back to former DMU boundaries. Disease surveillance will be initiated in DMUs 348 and 349 (southeast Minnesota) in response to the discovery of CWD in a wild deer in northeast Iowa. Surveillance efforts (e.g., special hunts, deer vehicle collisions, contracted city removal permits) will continue during the 2014 season in Anoka and Ramsey County, where CWD was discovered in a captive European red deer (*Cervus elaphus*) herd in 2012.

Research Activities

Hunter/Landowner Attitude Surveys: During 2012, a round-table approach using citizen teams to establish deer density goals for southwest Minnesota yielded results which were difficult to apply to management. To obtain detailed information from a large sample of stakeholders, we designed surveys to evaluate the experiences and attitudes of hunters and landowners regarding white-tailed deer densities, hunting opportunities, and potential regulations for deer hunting. Adult resident firearm hunters and landowners with more than 160 acres were included in the surveys. In total, 2,063 completed surveys were returned from hunters (response rate = 59%) and 2,105 completed surveys were returned from landowners (response rate = 48%). One-third of respondents who hunted harvested a buck in southwest Minnesota in 2012. Most hunters ($\geq 57\%$) were satisfied with the number of antlerless deer and the total number of deer seen while hunting. Only about one-third of all hunters were satisfied with the number and quality of bucks. Although 73% of landowners reported at least some deer damage, average total crop damage due to deer was \$4,885. Similar proportions of hunters (28%) and landowners (30%) believed there should be no change in the level of the deer population. However, the opinions of hunters trended toward increasing the deer population, whereas landowners tended to want the deer population decreased. Our results indicated that most hunters and landowners believed there was an adequate number of deer in the population. Hunters were also asked to rate their support for 3 potential regulations to reduce harvest pressure on bucks – buck permit lottery, antler point restriction, and a prohibition on cross-tagging of bucks. There was little support among hunters for a buck permit lottery (28%), however 50% of hunters supported an antler point restriction and 50% of hunters supported a youth-only deer season (Figure 1). The results of these surveys will help to inform decisions about future management of deer in southwest Minnesota and will be used to improve the stakeholder-based goal-setting process. In most DMUs in southwest Minnesota, deer densities will be managed at current levels or slightly decreased. MNDNR will explore implementation of an antler point restriction if a local grassroots effort supporting regulatory change becomes established.

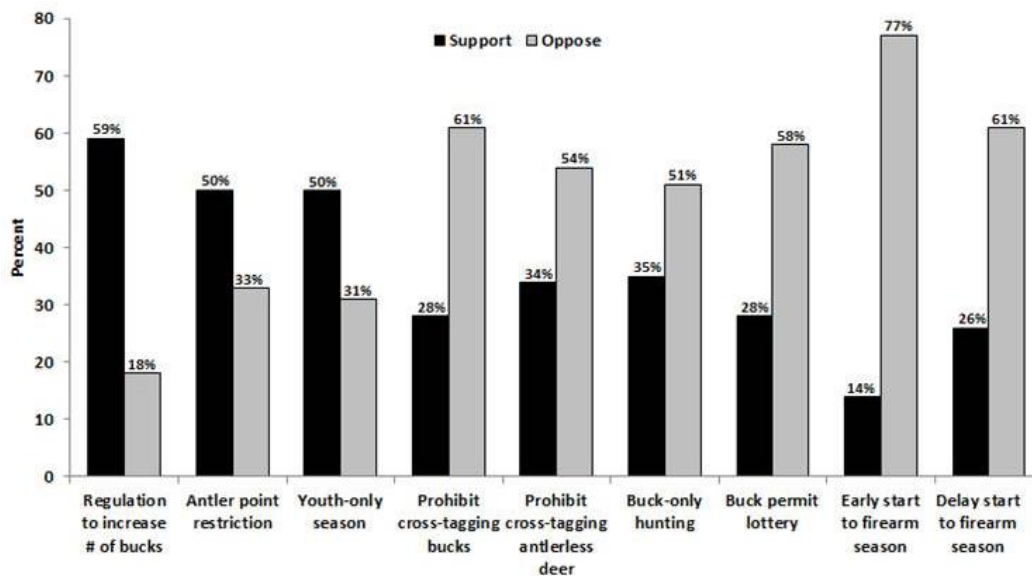


Figure 1. Hunter opinions regarding regulatory changes to white-tailed deer hunting seasons in southwest Minnesota, 2012.

Agricultural Deer Damage Management: Minimizing damage caused by white-tailed deer is an important consideration for managing deer densities in Minnesota. We conducted a pilot study during 2013 in southeast Minnesota to begin assessing the effectiveness of localized management of deer (i.e., targeted removal of deer in a limited area) to reduce damage to agricultural crops. We developed an efficient methodology for assessing damage caused by deer to corn and alfalfa. We also used baited infrared camera surveys to estimate the abundance of deer on individual properties. Preliminary results from the pilot study suggested that relative deer densities and harvest rates on focal properties where localized management was used were a minimum of two times higher than estimated deer densities for their respective DMUs. An average of 26% of the deer estimated to be utilizing focal properties were harvested. The pilot study provided the basis for a broader study which was initiated in spring 2014. A more comprehensive examination of crop losses relative to deer abundance will be conducted as part of the broader study.

Aerial Deer Surveys: We utilized quadrat-based aerial surveys to estimate deer densities in select DMUs. Surveys were conducted by three-person helicopter crews visually counting deer over snow. The purpose of the surveys was to recalibrate deer population models. During winter 2013-14, surveys were completed in 6 DMUs.

Pilot Study to Develop a Sampling Protocol for Aerial Deer Surveys Using Thermal Imaging: Snow cover is essential for MNDNR aerial deer surveys because it maximizes the visual contrast between deer and their background. However, snow cover is unpredictable and frequently inadequate in areas targeted for surveying. A survey technique that does not rely on snow cover or visual contrast is needed. Thermal imagers detect infrared radiation emitted by objects in the environment and convert this energy to a visual image. Detection of animals relies on thermal contrast between animals and their background, rather than visual contrast. As a result, thermal imaging may provide an alternative survey technique when visual contrast over snow is lacking. MNDNR currently utilizes a helicopter-mounted thermal imaging system (Gyrocam DS200) for enforcement and search and rescue purposes. During March 2014, we conducted a single flight to test the feasibility of using that system for surveying deer. Modifications to the current equipment will be necessary before additional test flights will be attempted.

Wildlife Health Issues

Chronic Wasting Disease: To date, CWD has been diagnosed in 3 captive elk (*Cervus canadensis*) herds, 1 captive white-tailed deer herd, 1 captive European red deer herd, and 1 wild white-tailed deer within the state of Minnesota. Two of the elk herds (Stearns and Aitkin counties) were discovered in 2002 and depopulated; no additional CWD-positive animals were found. In 2006, a captive white-tailed deer from a mixed deer/elk herd in Lac Qui Parle County was found to be infected with CWD. That herd was also depopulated without additional infection being detected. In 2009, a third captive elk herd (Olmsted County) was found to be infected with CWD and, following depopulation of >600 animals, 4 elk were confirmed with the disease. The United States Department of Agriculture's (USDA) indemnification document noted an apparent longstanding infection within this captive elk facility. In 2012, a captive European red deer was found infected with CWD in a herd of approximately 400 animals in Ramsey County. This marked the first time CWD was discovered in this species. Also in 2012,

USDA discontinued funding to depopulate CWD-infected herds. Thus the Ramsey County herd was quarantined with no future plan in place to deal with the infection. The herd owners have voluntarily slaughtered approximately half the herd to date; no new cases of the disease have been detected. Future plans for the remaining animals within this herd are uncertain. Beginning in 2004, MNDNR focused CWD surveillance efforts on wild deer in response to elevated risk factors (e.g., detection of CWD-positive animals in captive cervid farms in Minnesota, or proximity of positive CWD cases in wild deer in neighboring states). During 2010, 1 hunter-killed deer in Olmsted County (located within 3 miles of the depopulated, captive elk herd) tested positive for the disease, marking the first detection of CWD in Minnesota's wild deer population. In response to the positive deer detection, a ban on recreational deer feeding was immediately enacted in a 4-country area and a supplemental surveillance effort (i.e., landowner shooting permits, sharpshooters) was conducted in early-2011 to improve our understanding of disease prevalence and distribution in the local deer herd. To prevent further disease spread, MNDNR (1) created a 306-mi² CWD Management Zone (DMU 602) to facilitate special hunts, permits, and extended seasons, (2) restricted whole-carcass movements outside of the zone, (3) required mandatory sampling of all adult (≥ 1.5 years of age) hunter-killed deer, and (4) continued aggressive disease surveillance of hunter-killed deer in the CWD Management Zone for 3 consecutive years (2011–2013). No additional cases of CWD were discovered in wild deer. Disease surveillance in the CWD Management Zone has been discontinued and DMU 602 has been dissolved. Targeted CWD surveillance of deer exhibiting clinical signs of illness will continue statewide. In 2014, MNDNR plans to sample hunter-killed deer in DMUs 348/349 in response to the recent detection of CWD in Alamakee County, Iowa, and in Ramsey and Anoka Counties near the captive red deer herd.

Table 1. Statewide deer license sales, harvest, and success rates in Minnesota, 2001-2013.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% Change (2012-13)
FIREARM														
Resident License	401,005	368,587	340,919	311,128	301,905	302,537	299,943	381,362	377,085	379,500	381,775	391,615	387,373	-1
Non-Resident License	10,972	10,823	11,334	12,004	12,527	13,212	12,552	11,883	11,777	11,895	11,945	12,484	12,410	-1
Mgmt/Intensive Harvest Permit	59,013	105,419	194,201	183,347	177,764	159,468	146,120	190,165	140,926	143,640	137,348	85,336	92,879	9
Multi-Zone Buck License	41,921	35,701	33,094	32,783	27,678	16,098	15,180	--	--	--	--	--	--	--
Youth License (no tag)	4,011	2,748	--	--	--	--	--	--	--	--	--	--	--	--
Youth License	--	--	34,463	51,331	50,506	49,581	49,196	51,358	56,699	59,691	60,921	62,932	64,608	3
All Season Buck License	3,986	--	--	--	--	--	--	--	--	--	--	--	--	--
All Season Deer License	--	21,888	30,998	46,345	60,301	77,476	76,398	--	--	--	--	--	--	--
Early Antlerless Season Permit	--	--	--	--	6,810	7,715	28,246	30,974	12,757	9,737	0	0	1,126	0
Disease Management Permit	--	--	--	--	--	--	2,193	1,499	1,354	1,531	4,589	4,362	3,308	-24
Free Landowner License	2,604	3,462	3,956	3,961	3,959	3,953	3,973	3,918	3,351	4,235	3,805	4,769	4,800	1
Total License Sales ^a	523,512	548,628	648,965	640,899	641,450	630,040	633,801	671,159	603,949	610,229	600,383	561,498	566,504	1
Either-sex Permits Offered	284,210	363,765	31,625	30,760	28,830	19,125	18,830	32,325	60,800	60,083	13,776	32,854	36,816	12
Either-sex Permits Issued	196,603	192,907	25,386	24,111	23,552	16,764	15,454	27,396	57,631	54,381	11,456	32,766	36,178	10
Either-sex Permit Applications	225,341	202,086	30,253	28,454	26,694	21,680	32,777	47,682	90,882	86,783	21,071	67,308	68,811	2
Adult Male Harvest	98,645	100,083	110,440	105,994	95,612	95,715	97,573	85,674	83,837	88,286	76,289	83,957	77,820	-7
Antlerless Harvest	98,095	100,038	148,857	124,530	121,247	136,035	126,370	103,722	81,647	87,877	88,047	71,123	68,071	-4
Total Harvest ^b	196,740	200,121	259,297	230,524	216,859	231,750	223,943	189,396	165,484	176,163	164,336	155,080	145,891	-6
Success Rate (%) ^{a,b}	37.6	36.5	40.0	36.0	33.8	36.8	35.3	28.2	27.4	28.9	27.4	27.6	25.8	-7
ARCHERY														
Resident License	69,573	57,372	55,608	50,974	50,709	50,052	53,577	88,923	89,084	90,171	88,520	93,959	92,459	-2
Non-Resident License	1,288	1,261	1,428	1,144	1,206	1,284	1,509	1,614	1,614	1,630	1,713	1,810	1,903	5
Mgmt/Intensive Harvest Permit	22,141	17,742	0	0	0	0	0	0	0	0	0	0	0	0
Youth License	--	--	3,731	7,261	7,491	7,672	7,643	9,006	9,161	9,562	10,298	11,271	12,169	8
Free Landowner License	35	62	83	92	104	116	152	147	134	0	0	0	0	0
Total License Sales ^c	93,037	76,437	60,850	59,471	59,510	59,124	62,881	99,690	99,993	101,363	100,531	107,040	106,531	0
Total Harvest ^d	16,300	16,192	20,870	20,754	23,812	25,375	24,167	22,689	20,646	22,097	20,579	21,898	19,804	-10
Success Rate (%) ^{c,d}	17.5	21.2	34.3	34.9	40.0	42.9	38.4	22.8	20.6	21.8	20.5	20.5	18.6	-9
MUZZLELOADER														
Total License Sales ^e	13,043	11,764	10,044	10,122	9,567	9,293	11,365	66,447	63,915	55,644	59,346	58,335	51,239	-12
Total Harvest ^e	4,780	5,737	9,254	9,326	15,065	13,653	12,324	9,738	8,048	9,048	7,416	7,689	7,086	-8
Success Rate (%) ^{c,e}	36.6	48.8	92.1	92.1	157.5	146.9	108.4	14.7	12.6	16.3	12.5	13.2	13.8	5
TOTAL HARVEST	217,820	222,050	289,421	260,604	255,736	270,778	260,434	221,823	194,178	207,308	192,331	184,667	172,781	-6

^a Includes firearm, archery, and muzzleloader license sales from the All Season Deer License.^b Includes firearm harvest data from the All Season Deer License.^c Excludes firearm, archery, and muzzleloader license sales from the All Season Deer License.^d Includes archery harvest data from the All Season Deer License.^e Includes muzzleloader harvest data from the All Season Deer License.



2013-14

Missouri Deer Season Summary & Population Status Report



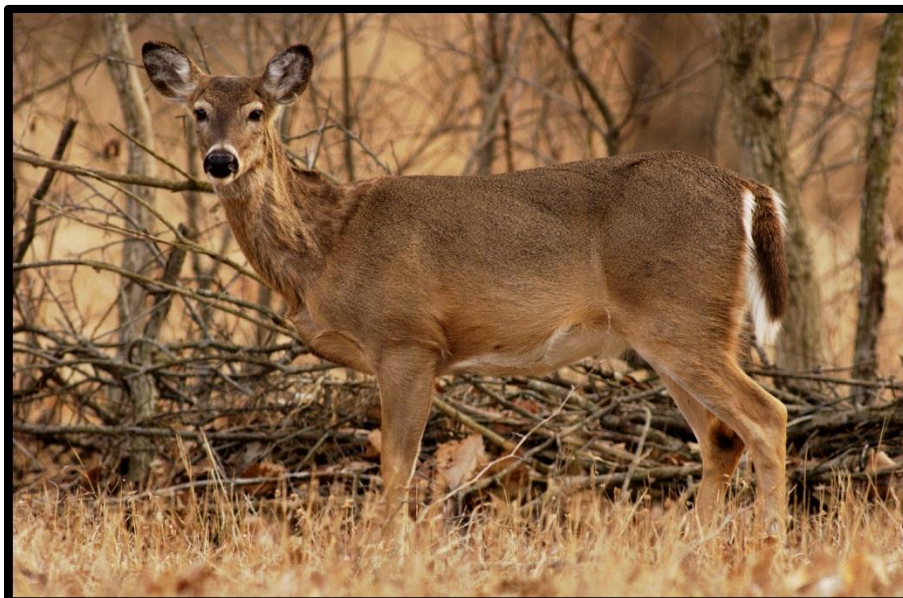
Missouri Department of Conservation

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& Lonnie Hansen

Resource Science Division

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2013-14 Overview

The 2013-14 deer harvest of 251,924 was nearly a 19% decrease from 2012-13. This reduction in statewide harvest is a result of long-term decreasing deer populations in central, northern, and western counties and average harvest in southern counties due to an average acorn production year.

Rapid deer population growth in central, northern, and western Missouri occurred during the 1980's, 1990's, and early 2000's required liberalization of harvest regulations to reduce deer populations to socially acceptable levels. These regulation liberalizations coupled with hemorrhagic disease outbreaks in 2007, 2012, and 2013 have resulted in decreasing deer numbers over the past five years. These population declines are indicated through population and hunter survey data. In southern Missouri, however, the 2013-14 deer harvest was a fairly typical reflection of average acorn production and slowly increasing deer populations. This is in spite of the 2012's record low acorn production and hemorrhagic disease outbreak that increased harvest rates and natural mortality, respectively.

The goal of MDC's Deer Program is to achieve and maintain deer populations at desired levels throughout Missouri. We define "desired levels" as the point at which deer populations are both biologically sustainable and socially acceptable to hunters, production landowners, and other interested stakeholders. The Deer Program annually develops regulation recommendations based upon harvest data, hunter and production landowner surveys, MDC staff surveys, public comments, and population simulations. Additionally, a White-tailed Deer Management Plan was drafted in 2014 to provide a long-term strategic plan that includes a series of goals, objectives, and strategies for managing Missouri's deer herd in the future. The Missouri Department of Conservation will implement a public participation plan to engage stakeholders and gain their input during the summer of 2014 regarding Missouri deer management including hunting season structure (e.g., time, methods, limits), deer population levels and trends, and feedback on the strategic plan. This will be the next step in a continual effort to engage and communicate with the public on deer management and regulations topics.

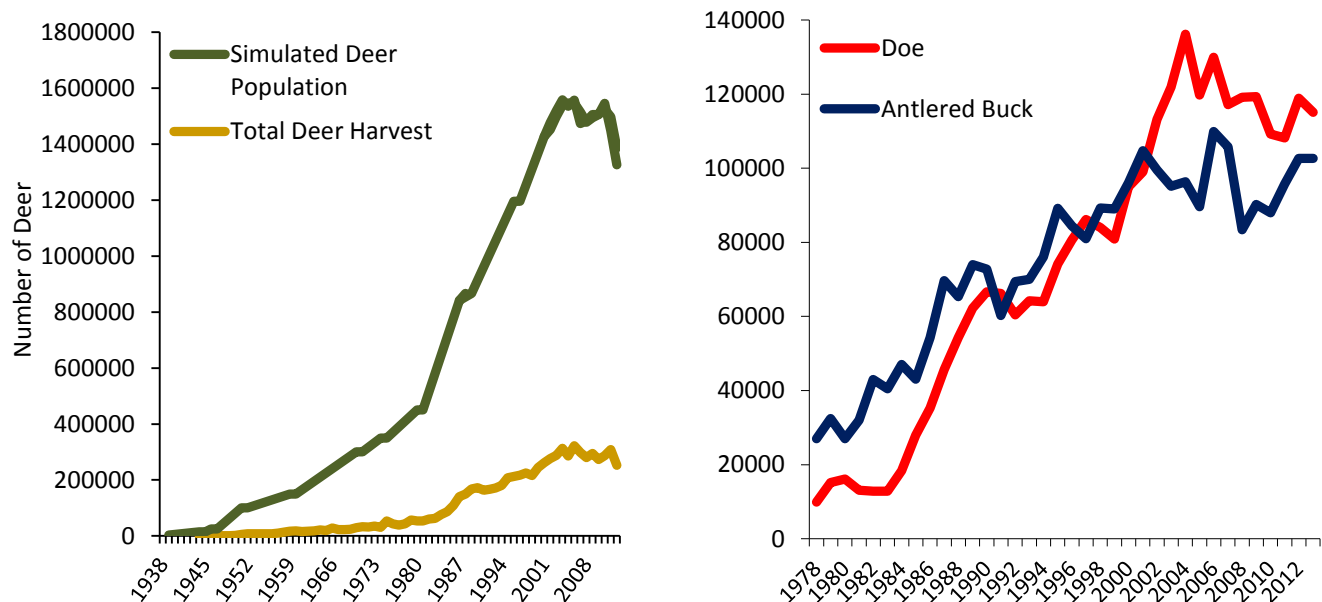


Figure 1. Statewide estimated deer population and total deer harvest from 1938 to 2013 (left). Number of antlered bucks and does in the statewide deer harvest from 1978 to 2013 (right).

Deer Season General Information: 2013-2014

Season Dates:

Archery Season: September 15 through January 15, closed during the November portion of the firearms deer season

Firearms Season:

Urban Portion: October 11 - 14
 Youth Portion: November 2 - 3; January 4 - 5
 November Portion: November 16 - 26
 Antlerless Portion: November 27 - December 8
 Alternative Methods Portion: December 21 - 31

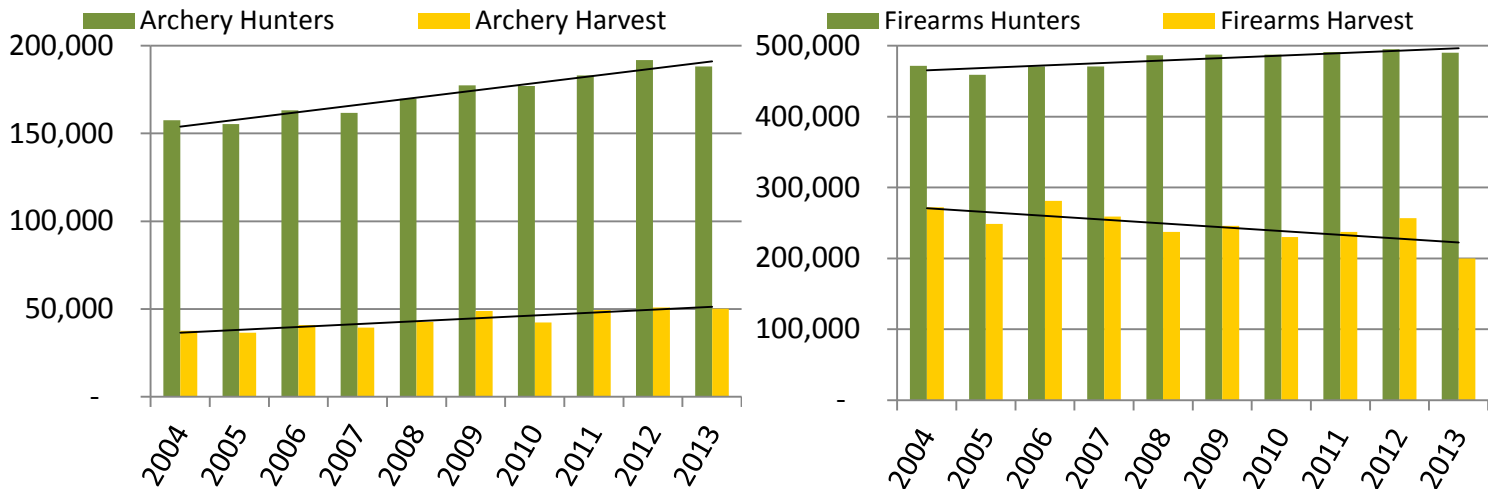


Figure 2. Trends in the number of individuals holding an archery and firearms deer hunting permit and harvest.

Archery Season Summary

The 2013 archery season yielded the second highest archery harvest in Missouri of 50,176 deer, which was a 2% decrease from the 2012. The 2013 harvest included 24,483 does, 5,426 button bucks, and 20,267 antlered bucks (Table 1). Coinciding with the decrease in archery harvest there was a 2% decrease in archery permit sales. The sale of permittee and youth archery antlerless permits decreased by 5% and 9%, respectively compared to 2012 (Table 2). A total of 188,220 individuals possessed an archery permit in 2013 (Table 3). While the number of archers decreased by 2% from 2012 there has been a 19% increase in archery hunting participation over the past ten years.

Firearms Season Summary

Resident firearms hunters obtained 891,779 permits, down 2% from 2012, which is a reflection of a decrease in antlerless permit purchases, but no change in any-deer permit purchases (Table 2). Nonresident firearm permits purchased were similar to 2012 with a total of 29,159 permits issued (Table 2). For the past several years the total number of individuals possessing a firearms deer hunting permit has increased 1% per year, however, in 2013 there was a 1% decrease (Table 3).

Deer harvest during the 2013-14 firearms season totaled 199,959. This was a 22% decrease from 2012-13 (Table 1). The total harvest was made up of 90,568 does, a 24% decrease from 2012; 25,300 button bucks, a 29% decrease; and 84,091 antlered bucks, an 18% decrease. The firearms harvest is composed of 95% resident hunter harvest and 5% non-resident hunter harvest, which has remained consistent for several years (Table 2). When reviewing deer harvest trends it is critical to evaluate on a regional or county level, because statewide harvest numbers do not convey local population; therefore refer to pages 9-13 for regional population trend information.

Harvest during the 2013 urban portion decreased by 45% from 2012, with a total of 605 deer harvested. Harvest during the urban portion is variable with harvest totaling 1,457 in 2009, 586 in 2010, 570 in 2011, and 1,100 in 2012.

Historically weather has greatly influenced harvest during the urban portion, and in 2013 temperatures were in the 70's, likely resulting in decreased participation, thus lower harvest.

In 2013, harvest during the early youth was down 3% from 2012 with a harvest of 18,859 and the late youth harvest was down 47% from 2012 with a harvest of 1,194 deer. The total harvest for both youth portions (early and late combined) consisted of 12,364 antlered bucks, 2,048 button bucks, and 5,641 does, totaling 20,053 deer (Table 1). The reduction in youth harvest is a result of decreased deer populations, but also a reflection of weather conditions during the late youth portion.

The 2013 harvest during the antlerless portion totaled 10,566 deer, which was a 30% decrease from 2012. The decrease in harvest is partially attributed to decreasing deer populations in central, northern, and western Missouri (refer to pages 9-13 for information on regional trends).

Lastly, the 2013 harvest during the alternative methods portion totaled 11,945 deer, which was a 20% decrease from 2012. The alternative methods portion harvest consisted of 2,632 antlered bucks, 1,760 button bucks, and 7,553 does, decreases of 26%, 22%, and 17% from 2012, respectively. This harvest decrease is partially a reflection of regional deer population decreases mentioned previously.

Managed Deer Hunt Summary

Overall, hunters harvested 1,789 deer during the managed deer hunts in 2013, which was 161 fewer or an 8% decrease from 2012. Managed deer harvest totals are annually a reflection of number of hunts and quotas, therefore harvest typically fluctuates with harvests totals being 1,950 in 2012, 1,800 in 2011, and 2,665 in 2010.

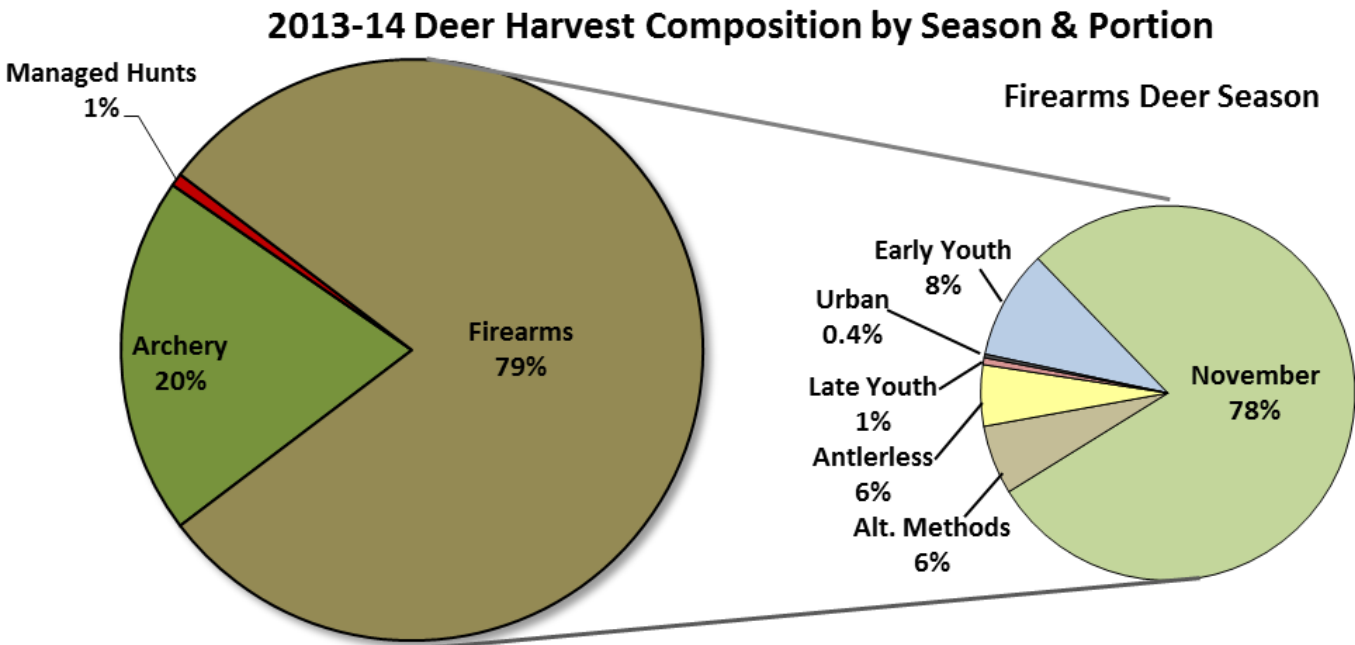


Figure 3. 2013-14 Composition of total deer harvest by seasons and portions of the firearms season.

Table 1. Deer Season Harvest Comparison: 2012 & 2013

Hunting Portion	Antlered Deer			Button Bucks			Does			Total		
	2012	2013	% Diff	2012	2013	% Diff.	2012	2013	% Diff.	2012	2013	% Diff.
Archery	17,437	20,267	16	6,275	5,426	-14	27,296	24,483	-10	51,008	50,176	-2
Urban	8	1	-88	195	105	-46	907	499	-45	1,110	605	-45
Early Youth	11,308	12,079	7	2,377	1,857	-22	5,806	4,923	-15	19,491	18,859	-3
November	87,039	68,926	-21	27,069	19,496	-28	89,879	68,320	-24	203,987	156,742	-23
Antlerless	149	133	-11	3,217	1,888	-41	11,762	8,545	-27	15,128	10,566	-30
Alt. Methods	3,565	2,632	-26	2,264	1,760	-22	9,107	7,553	-17	14,936	11,945	-20
Managed Hunts	496	457	-8	370	275	-26	1084	1057	-2	1,950	1,789	-8
Late Youth	483	285	-41	385	191	-50	1,365	718	-47	2,233	1,194	-47
CWD Seals*	64	35	-45	6	3	-50	16	10	-38	86	48	-44
Total Firearms	102,616	84,091	-18	35,513	25,300	-29	118,842	90,568	-24	256,971	199,959	-22
Total	120,549	104,815	-13	42,158	31,001	-26	147,222	116,108	-21	309,929	251,924	-19

Table 2. Permit Sales and Harvest by Permit Type

Permit Type	Number of Permits			Number of Deer Harvested		
	2012	2013	% Diff.	2012	2013	% Diff.
Permittee Archery	109,152	108,366	-1	21,172	22,578	7
Landowner Archery	86,212	85,367	-1	6,707	6,911	3
Youth Archery	7,057	6,791	-4	942	944	0
Permittee Archery Antlerless	52,472	50,079	-5	15,413	13,798	-10
Landowner Archery Antlerless	141,507	139,556	-1	6,227	5,378	-14
Youth Archery Antlerless	2,191	2,001	-9	410	357	-13
Permittee Firearms Any-Deer	293,098	294,550	0	76,655	61,268	-20
Landowner Firearms Any-Deer	181,322	180,880	0	41,908	32,874	-22
Youth Firearms Any-Deer	57,519	57,578	0	20,480	18,767	-8
Permittee Firearms Antlerless	223,111	208,802	-6	78,134	57,954	-26
Landowner Firearms Antlerless	156,174	154,878	-1	30,789	22,922	-26
Youth Firearms Antlerless	25,472	24,249	-5	8,451	6,160	-27
Resident Firearms	907,537	891,779	-2	244,100	189,529	-22
Nonresident Firearms	29,159	29,158	0	12,317	10,416	-15
Resident Archery	388,119	381,549	-2	47,539	46,614	-2
Nonresident Archery	10,472	10,611	1	3,332	3,352	1
Permittee Archery & Firearms	770,072	752,416	-2	221,657	181,826	-18
Landowner Archery & Firearms	565,215	560,681	-1	85,631	68,085	-20

* CWD Management Seals are part of the MDC's management plan to limit the spread of CWD. CWD Seals were distributed to landowners who own 5 acres or more in the CWD Core Area (30 square mile area in Linn and Macon counties), which permit the harvest of one deer of either sex on the specific property for which it was issued.

Table 3. Deer Hunter and Harvest Facts

	Archery	Firearms	Archery & Firearms Combined
Resident permits ¹	107,717	334,878	351,753 ³
Non-resident permits ¹	8,597	19,353	25,628 ³
Landowner permits ¹	85,696	181,913	183,993 ³
Total permittees ²	188,200	490,116	513,113 ³
Age distribution of hunters:			
10 or younger	1,701	22,333	-
11-15	10,896	50,102	-
16-40	82,766	180,308	-
41 or older	92,837	237,373	-
Antlerless permit sales:			
1	28,223	153,604	181,827
2	7,339	26,773	34,112
3	1,486	4,786	6,272
4 or more	1,001	2,567	3,568
Number of deer taken:			
0	150,239	328,473	329,894 ⁴
1	29,391	131,203	136,903 ⁴
2	6,344	24,857	33,531 ⁴
3	1,513	4,270	8,495 ⁴
4 or more	713	1,313	4,290 ⁴
Number of antlered deer taken:			
0	168,554	406,748	408,890 ⁴
1	19,059	82,773	92,885 ⁴
2	577	572	5,297 ⁴
3	10	23	248 ⁴
Percentage taking:			
1 or more deer	20.1	33.0	35.7 ⁴
1 deer	15.6	26.8	26.7 ⁴
2 deer	3.4	5.1	6.5 ⁴
3 or more deer	1.1	1.1	2.5 ⁴
Percentage taking:			
1 antlered buck	10.1	16.9	18.1 ⁴
2 antlered bucks	0.3	0.1	1.0 ⁴
3 or more antlered bucks	0.005	0.005	0.05 ⁴
Percentage of deer taken by nonresidents			
	6.7	5.2	5.5
Percentage of deer taken by landowners			
	27.9	24.6	27.2

¹ Number of any-deer permits issued

² Number of individuals possessing a permit, not number of permits issued

³ Number of individuals that held an archery and/or firearms permit

⁴ Number of individuals that harvested the specified number when combining their archery and firearms harvest

County Harvest Statistics

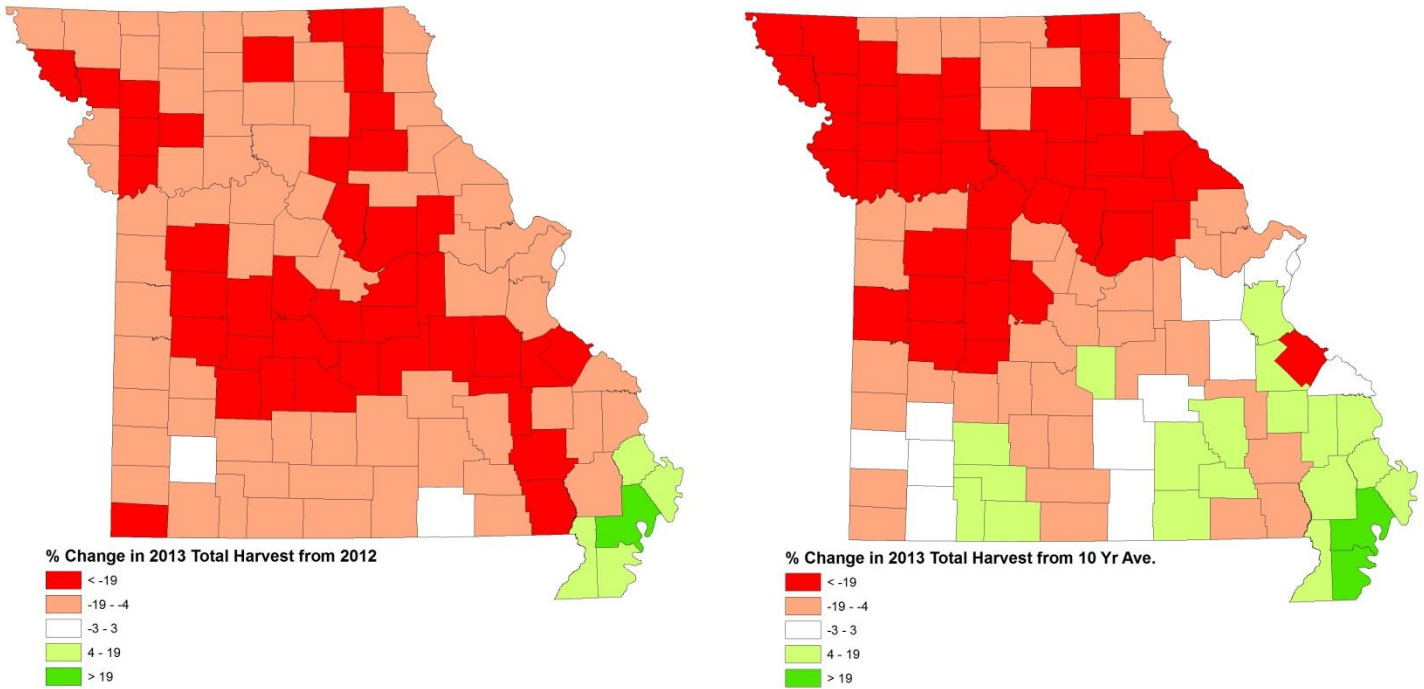


Figure 4. Percent change in total deer harvest from 2012 to 2013 and percent change in 2013 compared to the 10-year average by county with apparent long-term harvest decreases in central, northern, and western Missouri.

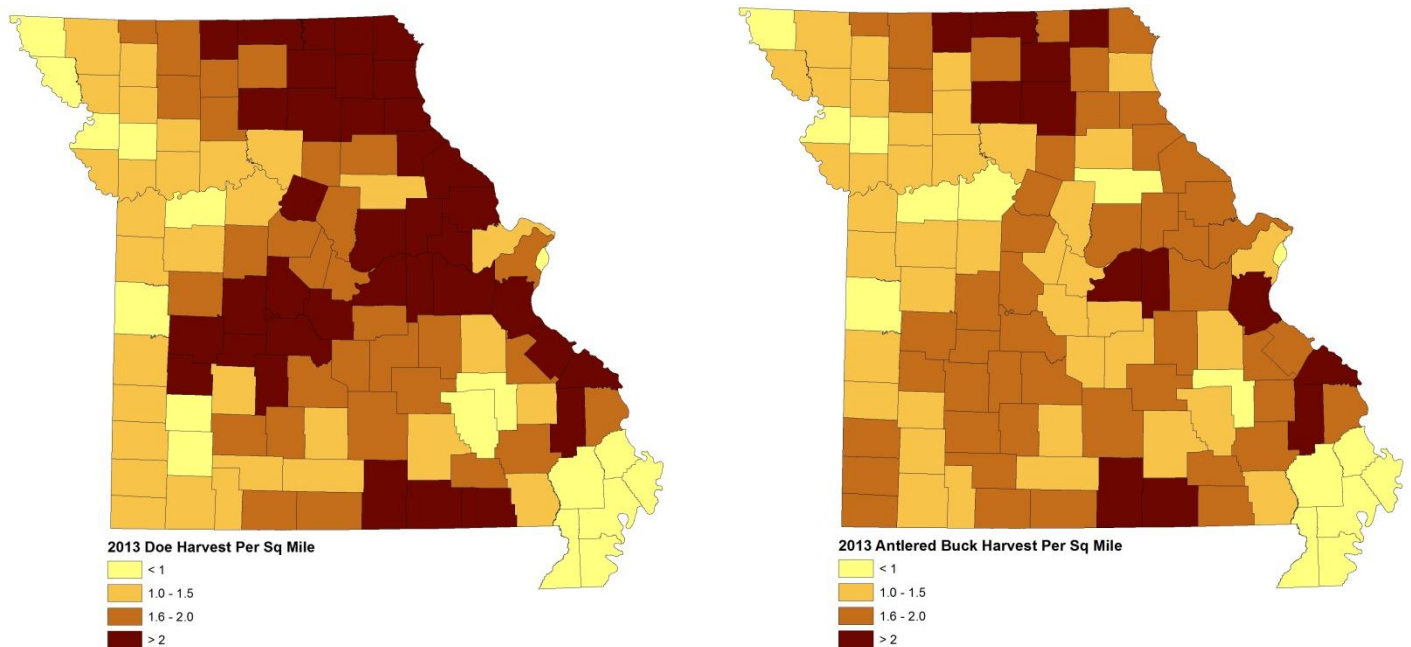


Figure 5. Doe and antlered buck harvest per square mile by county during the 2013 deer season.

Deer Hunter Data

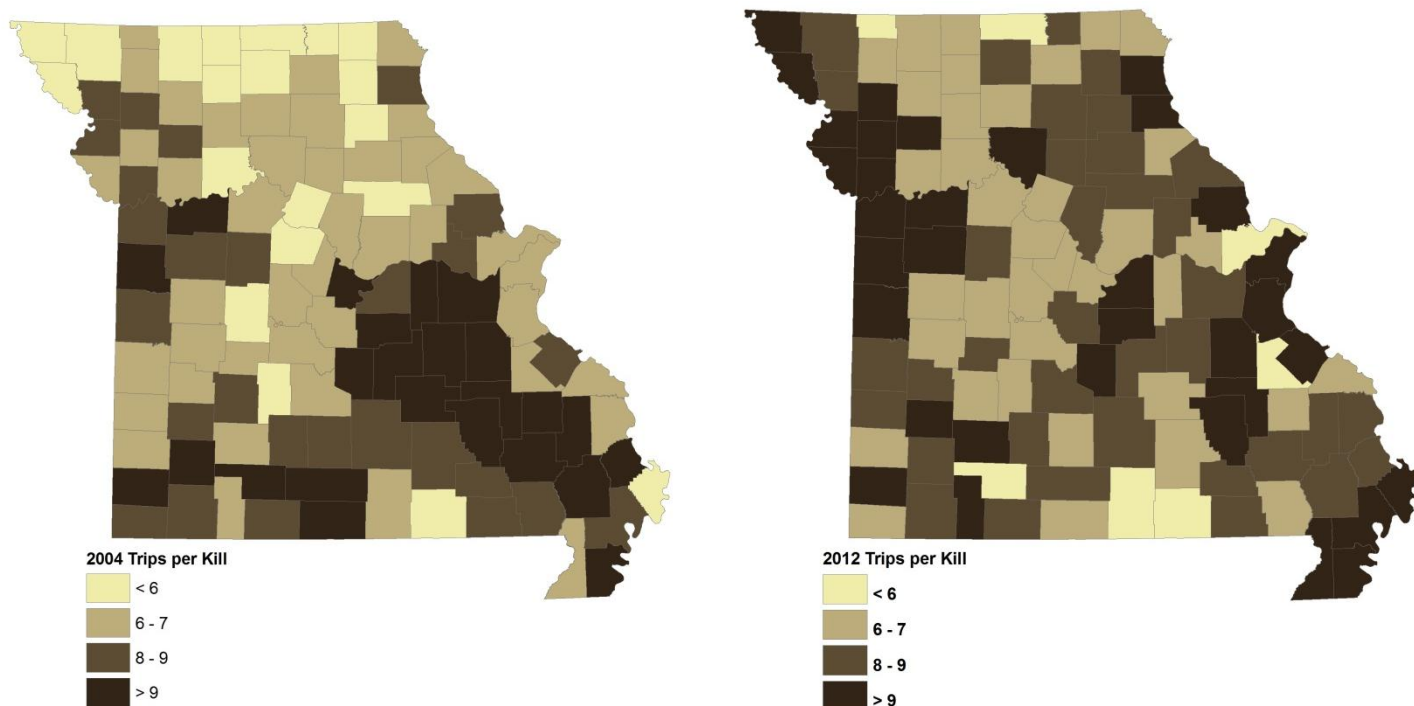


Figure 6. Hunter effort data shown by number of trips per harvested deer from hunter surveys performed in 2004 and 2012. The increase in trips per harvest (as illustrated by the darker gray) in central, northern, and western Missouri coincides with other information indicating decreased deer populations.

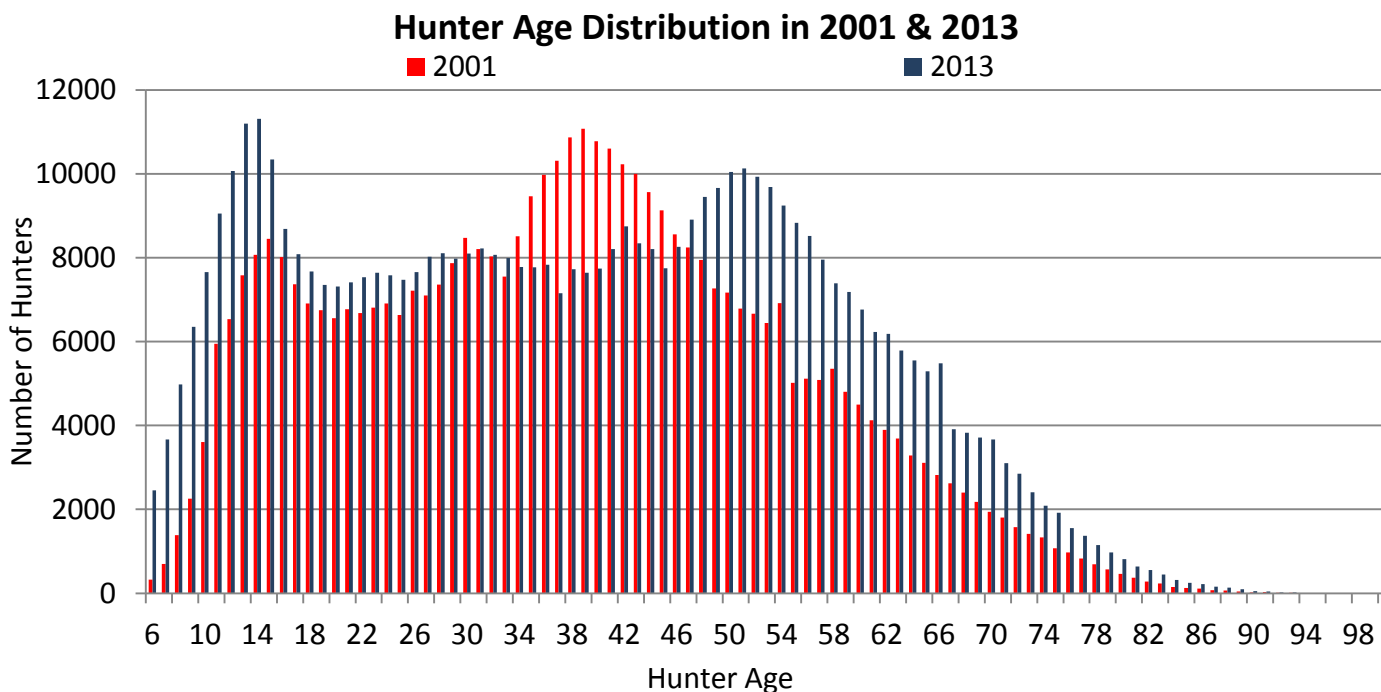
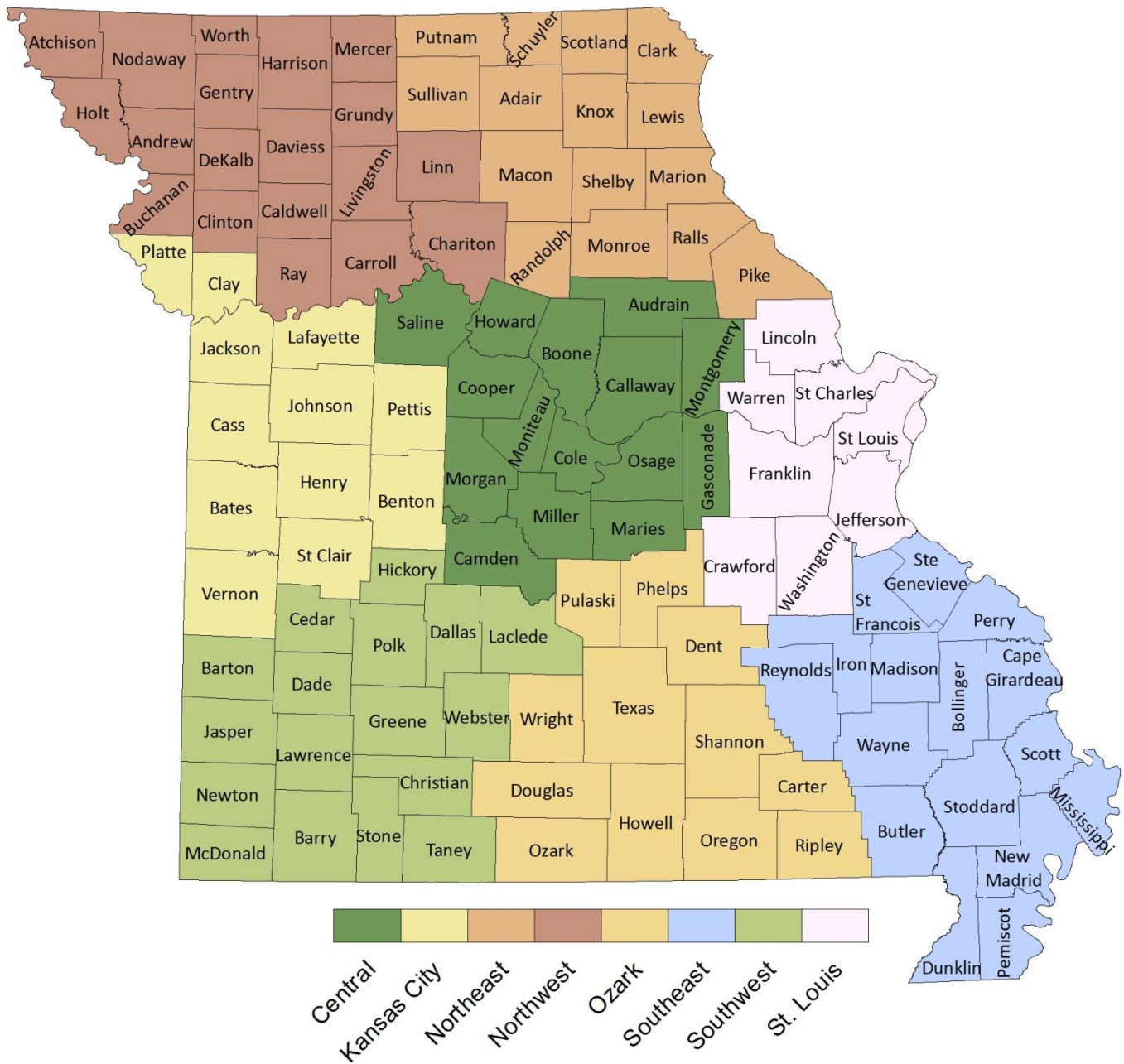


Figure 7. Age distribution of hunters in 2001 and 2013. As the “Baby Boomer” generation ages this portion of the hunting population will continue to decrease.

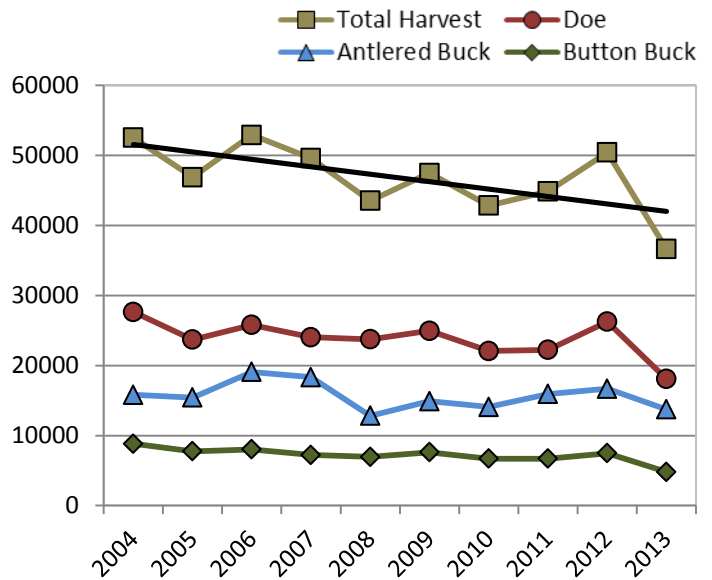
Regional Deer Populations

Statewide deer population trends are important; however, regional deer population trends are more informative to most landowners and hunters. This smaller scale makes deer population trends apparent and the factors influencing populations more easily identified. Although, regional information is more indicative of population trends, it is important to acknowledge that deer populations can vary considerably within a region, and even within a county. Regional and local diversity in deer numbers is a result of differences in land cover and use, harvest regulations, hunter goals and density, and hemorrhagic disease events to name a few. Therefore, regional information should be considered as a starting point when evaluating deer populations within a localized area.



Central Region (Audrain, Boone, Callaway, Camden, Cole, Cooper, Gasconade, Howard, Maries, Miller, Moniteau, Montgomery, Morgan, Osage, Saline)

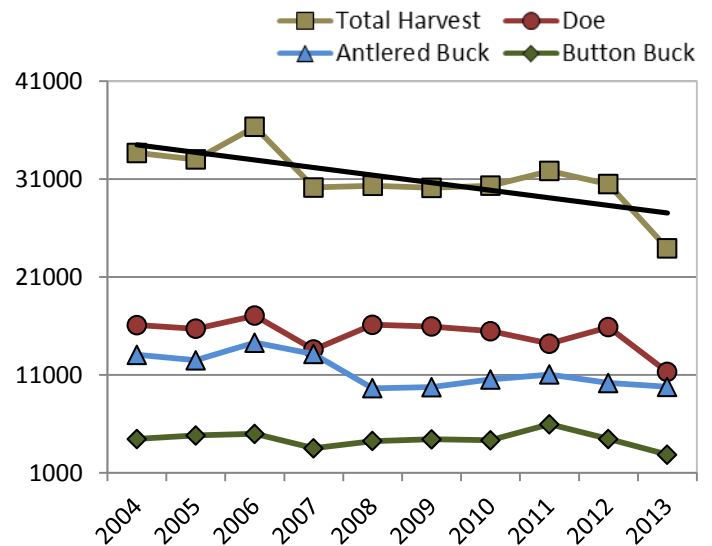
Deer populations vary across the Central Region due to habitat differences and severe hemorrhagic disease events in the past five years. Camden and the northern counties (Audrain, Howard, Boone, Saline, and Callaway) within this region have had significant deer population declines reflected in harvests decreasing by 22-35% over the past 10 years; a result of multiple hemorrhagic disease outbreaks and high doe harvest. The deer harvest decrease of 7-19% compared to the 10-year average in the remaining Central Region counties is partially a result of 2012's hemorrhagic disease outbreak, coupled with high harvest in 2012 due to low acorn production. Public perceptions of deer populations have shifted significantly over the last 10 years in response to changing deer numbers. Firearms antlerless permit availability will be reduced beginning in 2014 for most of this region in an effort to reduce doe harvest to allow populations to stabilize and/or grow to desired population levels.*



Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.03
# Trips Per Deer Killed (2012)	7.6

Kansas City Region (Bates, Benton, Cass, Clay, Henry, Jackson, Johnson, Lafayette, Pettis, Platte, St. Clair, Vernon)

Harvest in the Kansas City Region in 2013 was down 23% compared to the 10-year average. This decrease in harvest is a result of long-term high doe harvest and the 2012 hemorrhagic disease outbreak. All counties within the Kansas City Region had a decrease in harvest in 2013 when compared to the 10-year average with Benton, Clay, Henry, Johnson, and Platte having harvest declines of 24% or more. The 32% decline in Benton County was the largest and likely a result of 2012 hemorrhagic disease coupled with high deer harvest in 2012 due to low acorn abundance. This decrease in harvest coupled with production landowner and hunter survey data further validate that population declines have occurred in the Kansas City Region. Therefore, to allow deer populations to stabilize and/or increase to desired population levels, a reduction in firearms antlerless permit availability will occur in 2014 in the rural portions of the this region in an effort to decrease doe harvest. *

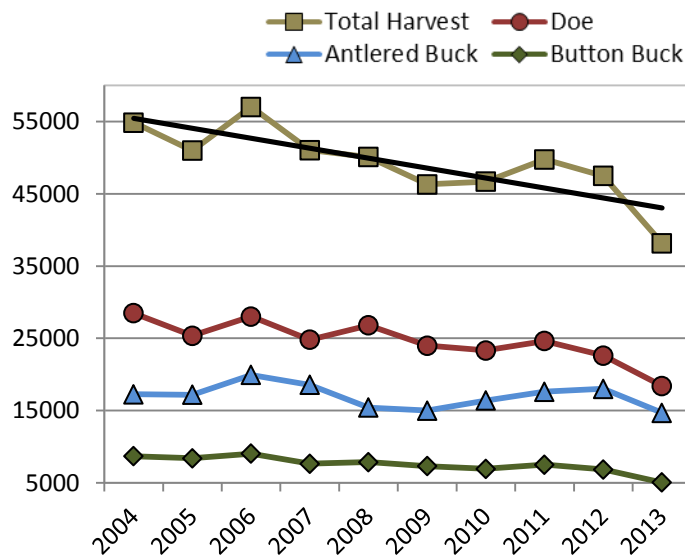


Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.12
# Trips Per Deer Killed (2012)	9.4

* Refer to the 2014 Fall Deer & Turkey Regulations Booklet for more information on regulation changes.

Northeast Region (Adair, Clark, Knox, Lewis, Macon, Marion, Monroe, Pike, Putnam, Ralls, Randolph, Schuyler, Scotland, Shelby, Sullivan)

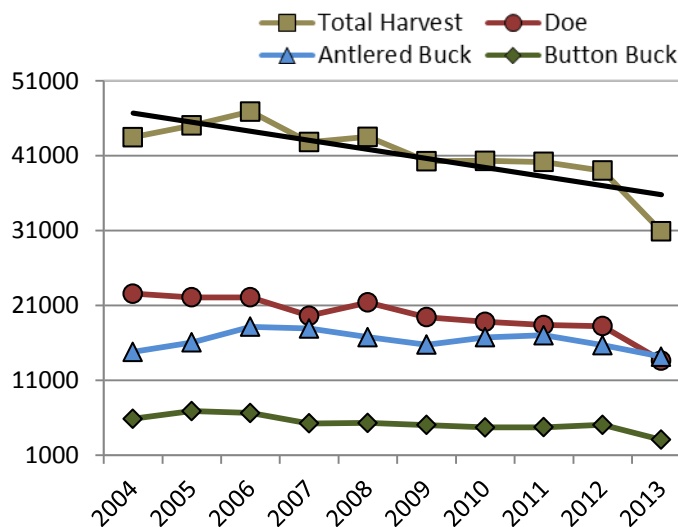
The 2013 deer harvest in the Northeast Region continued the long-term harvest decline with a decrease of 22% from the 10-year average. Many parts of the Northeast Region experienced significant hemorrhagic disease mortality in 2012 and 2013. Therefore, in some counties these repeated hemorrhagic disease events coupled with liberal antlerless harvest opportunities has resulted in deer populations decreasing to below socially acceptable levels. The greatest population declines have occurred in Monroe, Randolph, and Shelby counties where the 2013 harvest decreased by 30% or more compared to the 10-year average. As a result of population declines, firearm antlerless permits will be reduced for the 2014 deer season to one per hunter per county for the majority of counties within the Northeast Region. However, each CWD Containment Zone county will have two firearms antlerless permits available per hunter to balance disease and population management efforts.*



Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.07
# Trips Per Deer Killed (2012)	7.8

Northwest Region (Andrew, Atchison, Buchanan, Caldwell, Carroll, Chariton, Clinton, Daviess, DeKalb, Gentry, Grundy, Harrison, Holt, Linn, Livingston, Mercer, Nodaway, Ray, Worth)

The deer population and harvest has been steadily decreasing over the last decade in the Northwest Region. Harvest in 2013 was 25% lower than the 10-yr average. Declining deer populations are a result of liberalized antlerless harvest opportunities, the antler point restriction, and hemorrhagic disease outbreaks. However, significant land use changes in some areas have also reduced the amount of available deer habitat, contributing to deer population reductions. The most significant population reductions are within Atchison, Holt, and Ray counties, where harvest was down 30% to 51% in 2013 compared to the 10-year average. While Worth, Harrison, and Mercer counties have not experienced long-term population declines similar to other counties, harvest was down in 2013 likely as a result of hemorrhagic disease in 2012. To allow populations to increase to or stabilize at socially acceptable levels in many areas, hunters will be limited to one firearms antlerless permit per each Northwest county for the 2014 season, except in Linn and Chariton counties, which will have two to facilitate CWD management efforts.*

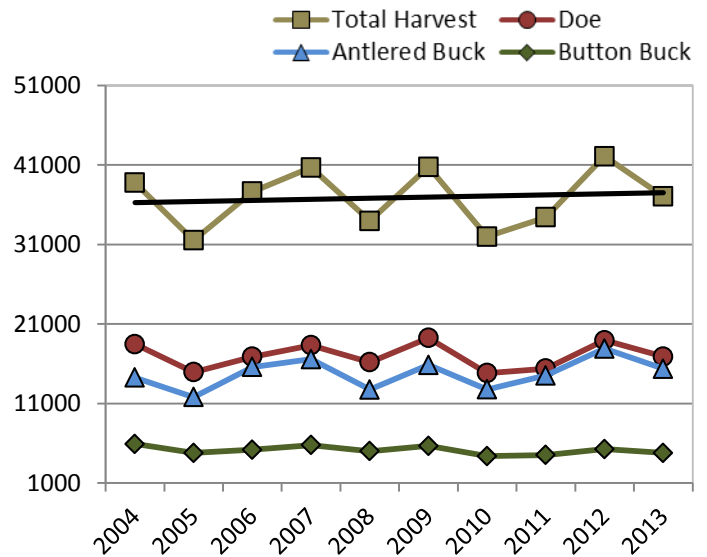


Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.26
# Trips Per Deer Killed (2012)	8.4

* Refer to the 2014 Fall Deer & Turkey Regulations Booklet for more information on regulation changes.

Ozark Region (Carter, Dent, Douglas, Howell, Oregon, Ozark, Phelps, Pulaski, Ripley, Shannon, Texas, Wright)

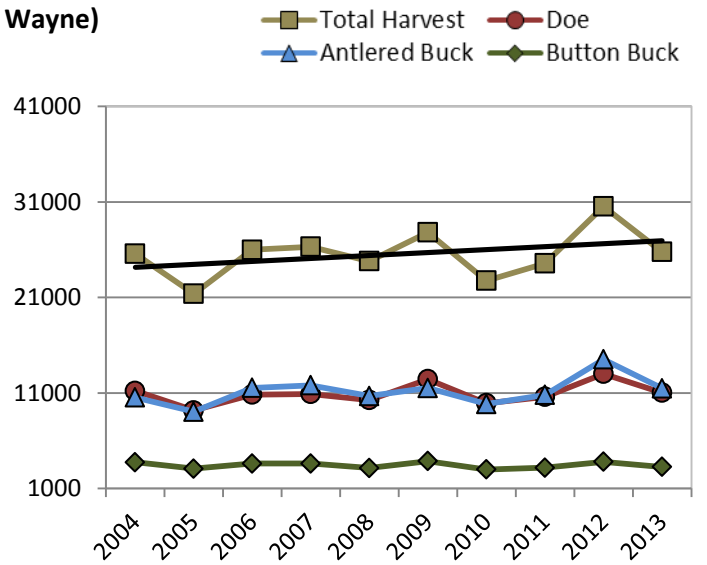
Deer harvest in the Ozark Region was typical of an average acorn production year with harvest similar to the 10-year average. In forest dominated areas like the Ozarks, acorns greatly influence deer harvest by influencing deer movement. For example, low acorn availability results in deer traveling frequently for food and often to fields, increasing deer sightings for hunters, and consequently increasing harvest. However, when acorns are abundant it can cause a decrease in deer harvest, therefore it is important to evaluate several years of harvest to determine trends instead of a single year. For example, harvest was up 22% in 2012, but this was a result of low acorn production and not the result of a large population increase. Generally, the deer population in the Ozark Region has been stable to slowly increasing over the last decade. Carter and Shannon counties had the largest increase in harvest in 2013 compared to the 10-year average with increases of 13% and 12%, respectively. While Wright and Phelps counties had the largest decreases of 17% and 13%, respectively. Stable to slowly increasing deer populations across the Ozarks are generally well accepted because deer populations remain below desirable levels in many areas.



Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.19
# Trips Per Deer Killed (2012)	7.5

Southeast Region (Bollinger, Butler, Cape Girardeau, Dunklin, Iron, Madison, Mississippi, New Madrid, Pemiscot, Perry, Reynolds, St. Francois, Ste. Genevieve, Scott, Stoddard, Wayne)

Deer management in the Southeast Region is complex due to differences in habitat, land use, and slowly increasing (yet varying) deer densities, coupled with contrasting stakeholder perceptions of deer population levels. While harvest in the Southeast Region was only up 1% from the 10-year average, it was the only region in 2013 to have an increase in harvest. When comparing the harvest to 2012, the “boot heel” counties were the only counties in the state that had an increase in harvest, a reflection of growing deer populations and minimal influence of acorn production on harvest. Generally, harvest in other Southeast counties was a reflection of a typical acorn crop and slowly increasing deer populations. In response to increasing localized deer-related problems in Cape Girardeau County, there will be one firearms antlerless permit available per hunter in the 2014 deer season. Southeast Region deer populations will be closely monitored and regulation changes will be proposed if needed to maintain populations at desired levels.*

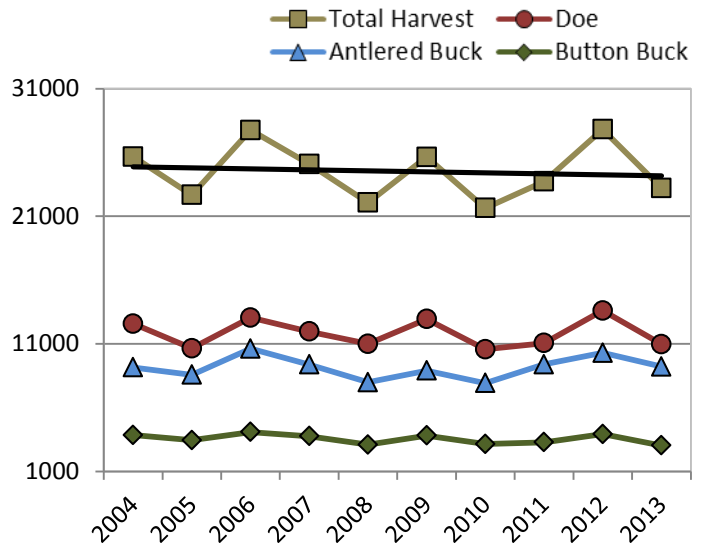


Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.33
# Trips Per Deer Killed (2012)	12.1

* Refer to the 2014 Fall Deer & Turkey Regulations Booklet for more information on regulation changes.

St. Louis Region (Crawford, Franklin, Jefferson, Lincoln, St. Charles, St. Louis, Warren, Washington)

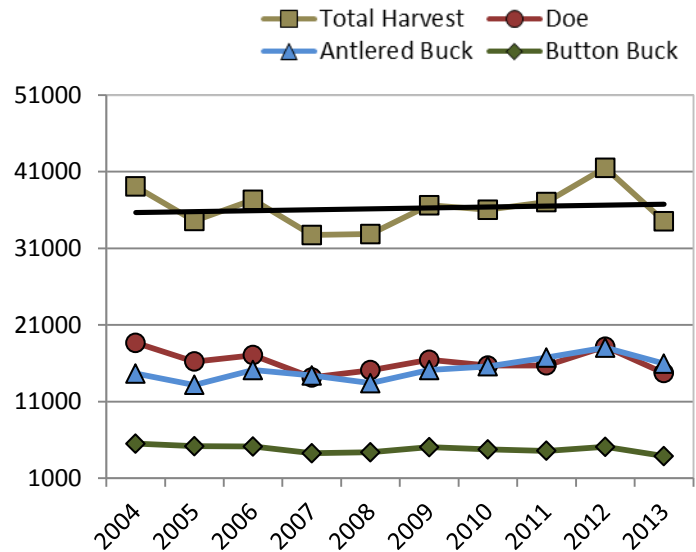
The 2013 deer harvest within rural portions of the St. Louis Region was fairly typical of an average acorn production year with a decrease of only 5% compared to the 10-year average. The greatest change in harvest compared to the 10-year average was a 17% decrease in Lincoln County, which is consistent with long-term decreasing deer populations as a result of liberalized antlerless harvest opportunities and the antler point restriction, coupled with hemorrhagic disease events. Lincoln and Warren counties will go from any number of firearms antlerless permits per hunter to one for the 2014 deer season in response to decreasing deer numbers. Slowly increasing deer populations in the southern portion of the region may warrant some increased antlerless harvest. Therefore, regulation changes will be considered in the next few years, as we will continue to monitor deer populations and collect public feedback. Firearm antlerless permits within the urban zones will be reduced from any number to two, which will still allow urban deer management efforts.*



Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.16
# Trips Per Deer Killed (2012)	8.5

Southwest Region (Barry, Barton, Cedar, Christian, Dade, Dallas, Greene, Hickory, Jasper, Laclede, Lawrence, McDonald, Newton, Polk, Stone, Taney, Webster)

The 2013 deer harvest in the Southwest Region was down 5% from the 10-year average, which was a reflection of an average acorn production year, coupled with slowly growing deer populations. Counties that allow one firearm antlerless permit per hunter should continue to allow deer populations to slowly increase. However, Cedar and Hickory counties have experienced population declines as a result of allowing any number of firearms antlerless permits per hunter, which will be reduced to one for the 2014 deer season to allow populations to recover to desired levels. In contrast, Barton County will increase from one to two firearms antlerless permits in response to increased local deer-related issues over the past several years. This will improve the ability of hunters and landowners to manage local deer populations during the hunting season.*



Harvest & Survey Info	Stats
# Females Per 1 Male Harvest	1.35
# Trips Per Deer Killed (2012)	9.6

* Refer to the 2014 Fall Deer & Turkey Regulations Booklet for more information on regulation changes.

County Deer Populations & Trends

The Deer Program annually evaluates a variety of data including deer population information, hunter and landowner surveys, and public input to assess county-specific deer populations. Collectively, this information serves as the foundation for regulation development.

We review two main forms of deer population data: harvest information and population indices. Harvest data includes the total number of deer harvested per county, but also the composition of that harvest (antlered buck, button buck, and doe). Population data includes bowhunter observation indices and population simulations that incorporate harvest numbers, age-at-harvest data, and estimated survival and reproduction rates. Social data is valuable when assessing the deer population in relation to acceptable levels of the public. Statewide, we annually send out surveys to 9,000 production landowners to assess perceptions and attitudes toward deer populations and regulations. Additionally, we survey 35,000 archery hunters and 35,000 firearm hunters, which allows us to estimate hunter effort data (see page 8), hunter density, and opinions concerning deer populations and regulations. We also incorporate public comments received throughout the year via web comments, letters, calls, social media, public meetings, emails, and any other feedback.

The Deer Program annually reviews all this information on a county-by-county basis to classify the status of the deer population and trend (See Figure 8 & 9). When classifying the status of the deer population, we generally evaluate it in the context of acceptable levels of the public. While biological carrying capacity, or the habitat's limitations on the number of deer that can be supported, is included within our assessment, generally cultural carrying capacity will be met first. This is because production landowners, motorists, and other stakeholders will often not tolerate deer population levels at biological carrying capacity. The Deer Program also evaluates the deer population growth trend for each county, as this indicates the direction that the population is headed.

It is critical to acknowledge that deer populations vary within a state, region, and even a county due to variation in habitat, harvest regulations, local hunter goals and practices, hunter density, and disease outbreaks like hemorrhagic disease. Therefore, these assessments are not applicable to every local situation, but are a general representation of trend information for each respective county.

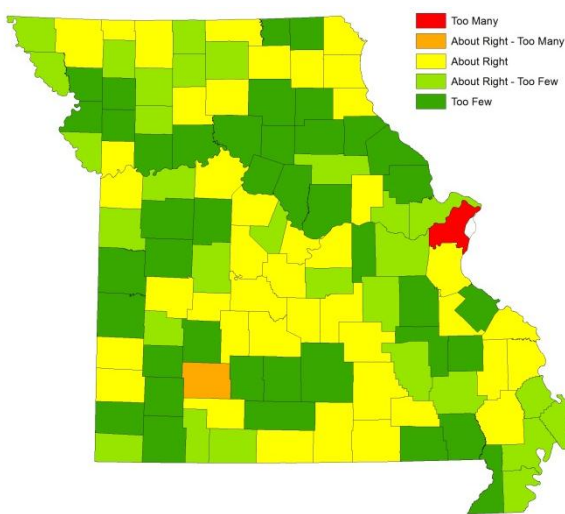


Figure 8. 2013 assessment of county deer population levels in relation to social acceptance of all stakeholders.

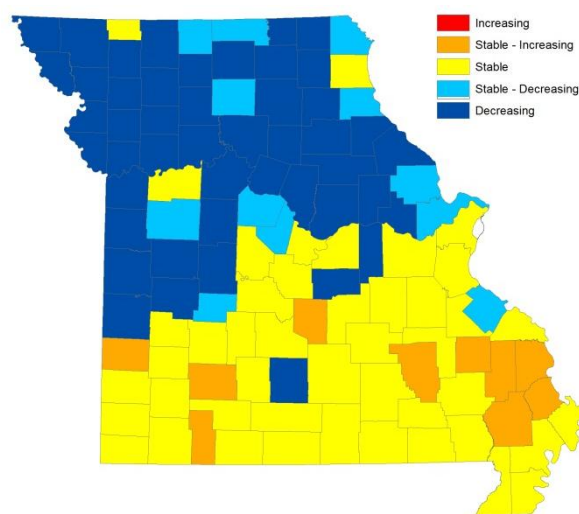


Figure 9. 2013 assessment of county deer population trends.

Table 4. Archery and Firearms Harvest Totals for the 2013-14 Missouri Deer Season.

County	Archery				Firearms				Totals			
	Antlered Buck	Button Buck	Doe	Total	Antlered Buck	Button Buck	Doe	Total	Antlered Buck	Button Buck	Doe	Total
	Adair	242	68	326	636	1020	317	1149	2486	1262	385	1475
Andrew	86	21	85	192	509	100	480	1089	595	121	565	1281
Atchison	68	11	68	147	323	47	285	655	391	58	353	802
Audrain	122	39	160	321	515	195	617	1327	637	234	777	1648
Barry	205	55	185	445	740	176	608	1524	945	231	793	1969
Barton	138	27	178	343	613	122	514	1249	751	149	692	1592
Bates	127	15	130	272	614	164	585	1363	741	179	715	1635
Benton	229	67	275	571	992	416	1361	2769	1221	483	1636	3340
Bollinger	254	94	413	761	1112	332	1050	2494	1366	426	1463	3255
Boone	254	75	330	659	739	240	945	1924	993	315	1275	2583
Buchanan	57	14	49	120	314	98	331	743	371	112	380	863
Butler	222	45	202	469	567	169	531	1267	789	214	733	1736
Caldwell	82	10	78	170	528	103	486	1117	610	113	564	1287
Callaway	290	62	397	749	1142	389	1401	2932	1432	451	1798	3681
Camden	257	103	377	737	879	399	1295	2573	1136	502	1672	3310
Cape Girardeau	172	64	282	518	880	178	656	1714	1052	242	938	2232
Carroll	122	28	153	303	803	148	685	1636	925	176	838	1939
Carter	207	59	197	463	778	254	702	1734	985	313	899	2197
Cass	162	26	147	335	602	138	573	1313	764	164	720	1648
Cedar	141	24	212	377	735	245	915	1895	876	269	1127	2272
Chariton	139	28	120	287	833	174	694	1701	972	202	814	1988
Christian	228	39	255	522	647	149	554	1350	875	188	809	1872
Clark	142	58	248	448	702	313	1076	2091	844	371	1324	2539
Clay	206	48	230	484	300	71	259	630	506	119	489	1114
Clinton	63	11	73	147	336	89	304	729	399	100	377	876
Cole	94	33	115	242	446	163	643	1252	540	196	758	1494
Cooper	125	34	173	332	742	222	900	1864	867	256	1073	2196
Crawford	262	89	282	633	1144	332	1092	2568	1406	421	1374	3201
Dade	128	27	79	234	551	109	400	1060	679	136	479	1294
Dallas	198	43	222	463	857	263	880	2000	1055	306	1102	2463
Davies	133	24	149	306	740	210	926	1876	873	234	1075	2182
DeKalb	41	18	67	126	459	92	412	963	500	110	479	1089

Table 4. Archery and Firearms Harvest Totals for the 2013-14 Missouri Deer Season.

County	Archery			Firearms			Totals			
	Antlered Buck	Button Buck	Doe	Antlered Buck	Button Buck	Doe	Antlered Buck	Button Buck	Doe	
	Total	Total	Total	Total	Total	Total	Total	Total	Total	
Dent	185	63	254	1156	363	1204	1341	426	1458	3225
Douglas	183	35	191	993	224	758	1176	259	949	2384
Dunklin	53	10	43	152	36	117	205	46	160	411
Franklin	327	140	572	1437	484	1674	1764	624	2246	4634
Gasconade	181	64	258	911	336	1310	1092	400	1568	3060
Gentry	99	13	97	599	134	580	698	147	677	1522
Greene	319	73	341	722	218	767	1041	291	1108	2440
Grundy	114	22	104	514	152	578	628	174	682	1484
Harrison	259	25	250	1100	255	990	1359	280	1240	2879
Henry	153	55	250	786	282	1039	939	337	1289	2565
Hickory	145	40	184	579	275	908	724	315	1092	2131
Holt	93	18	95	421	92	330	514	110	425	1049
Howard	140	34	190	749	169	759	889	203	949	2041
Howell	319	82	373	1595	566	1917	1914	648	2290	4852
Iron	79	23	52	455	133	323	534	156	375	1065
Jackson	348	94	402	356	74	323	704	168	725	1597
Jasper	282	37	229	874	164	569	1156	201	798	2155
Jefferson	404	157	688	1000	367	1278	1404	524	1966	3894
Johnson	158	26	138	688	194	736	846	220	874	1940
Knox	181	60	265	708	362	996	889	422	1261	2572
Laclede	260	76	282	1167	323	1188	1427	399	1470	3296
Lafayette	76	16	87	396	151	466	472	167	553	1192
Lawrence	164	31	135	568	127	478	732	158	613	1503
Lewis	107	51	187	618	340	917	725	391	1104	2220
Lincoln	269	85	327	1001	340	1211	1270	425	1538	3233
Linn	269	52	317	1062	247	1012	1331	299	1329	2959
Livingston	143	15	130	658	170	685	801	185	815	1801
Macon	321	79	376	1407	363	1380	1728	442	1756	3926
Madison	127	44	156	644	174	472	771	218	628	1617
Maries	137	49	179	587	233	786	724	282	965	1971
Marion	122	40	163	591	230	836	713	270	999	1982
McDonald	177	29	126	662	118	448	839	147	574	1560
Mercer	221	42	245	711	208	779	932	250	1024	2206

Table 4. Archery and Firearms Harvest Totals for the 2013-14 Missouri Deer Season.

County	Archery			Firearms			Totals			
	Antlered Buck	Button Buck	Doe	Antlered Buck	Button Buck	Doe	Antlered Buck	Button Buck	Doe	Total
	Buck	Buck		Buck	Buck		Buck	Buck		
Miller	155	62	216	668	356	1054	823	418	1270	2511
Mississippi	33	2	36	217	9	55	250	11	91	352
Moniteau	72	19	84	397	185	586	469	204	670	1343
Monroe	162	42	224	783	249	919	945	291	1143	2379
Montgomery	166	37	213	831	256	907	997	293	1120	2410
Morgan	201	69	284	841	325	1294	1042	394	1578	3014
New Madrid	39	9	52	250	24	105	289	33	157	479
Newton	317	34	209	721	149	571	1038	183	780	2001
Nodaway	176	15	150	860	152	802	1036	167	952	2155
Oregon	311	95	396	1309	603	2049	1620	698	2445	4763
Osage	258	69	317	1139	388	1513	1397	457	1830	3684
Ozark	232	50	224	1079	190	918	1311	240	1142	2693
Pemiscot	18	5	22	84	12	50	102	17	72	191
Perry	115	43	176	931	246	959	1046	289	1135	2470
Pettis	153	20	190	701	204	859	854	224	1049	2127
Phelps	167	51	257	696	308	897	863	359	1154	2376
Pike	260	72	314	1078	371	1444	1338	443	1758	3539
Platte	177	32	270	378	57	303	555	89	573	1217
Polk	178	31	178	788	170	601	966	201	779	1946
Pulaski	182	76	271	581	192	641	763	268	912	1943
Putnam	267	47	303	859	257	926	1126	304	1229	2659
Ralls	129	38	170	624	245	849	753	283	1019	2055
Randolph	149	23	128	793	196	744	942	219	872	2033
Ray	104	18	105	605	130	557	709	148	662	1519
Reynolds	136	37	125	702	252	597	838	289	722	1849
Ripley	254	94	272	952	354	1244	1206	448	1516	3170
Saint Charles	257	50	242	640	160	634	897	210	876	1983
Saint Clair	189	66	249	940	353	1342	1129	419	1591	3139
Saint Francois	163	44	196	651	209	622	814	253	818	1885
Saint Louis	362	157	657	333	70	367	695	227	1024	1946
Sainte Genevieve	108	45	232	799	216	900	907	261	1132	2300
Saline	100	23	126	595	184	659	695	207	785	1687
Schuyler	83	33	119	401	223	647	484	256	766	1506

Table 4. Archery and Firearms Harvest Totals for the 2013-14 Missouri Deer Season.

County	Archery			Firearms			Totals		
	Antlered Buck	Button Buck	Doe	Antlered Buck	Button Buck	Doe	Antlered Buck	Button Buck	Doe
	Total	Total	Total	Total	Total	Total	Total	Total	Total
Scotland	193	62	245	725	320	1009	918	382	1254
Scott	63	9	66	289	52	200	352	61	266
Shannon	149	61	189	1003	336	1181	1152	397	1370
Shelby	150	56	221	648	241	927	798	297	1148
Stoddard	214	72	233	527	197	567	741	269	800
Stone	168	33	171	579	136	403	747	169	574
Sullivan	241	49	276	984	257	1022	1225	306	1298
Taney	225	51	238	859	218	798	1084	269	1036
Texas	278	88	353	1795	442	1654	2073	530	2007
Vernon	179	53	215	868	222	861	1047	275	1076
Warren	194	63	245	652	231	759	846	294	1004
Washington	152	59	204	774	245	737	926	304	941
Wayne	289	127	392	1138	352	1150	1427	479	1542
Webster	189	53	204	816	206	686	1005	259	890
Worth	120	4	94	392	80	310	512	84	404
Wright	179	39	187	787	149	566	966	188	753
Central	2552	772	3419	11181	4040	14669	13733	4812	18088
Kansas City	2157	518	2583	7621	2326	8707	9778	2844	11290
Northeast	2749	778	3565	11941	4284	14841	14690	5062	18406
Northwest	2389	389	2429	11767	2681	11226	14156	3070	13655
Ozark	2646	793	3164	12724	3981	13731	15370	4774	16895
Southeast	2085	673	2678	9398	2591	8354	11483	3264	11032
Southwest	3462	703	3428	12478	3168	11288	15940	3871	14716
St. Louis	2227	800	3217	6981	2229	7752	9208	3029	10969
GRAND TOTAL	20267	5426	24483	84091	25300	90568	104358	30726	115051
			50176	199959	30726	115051	250135		

Deer Management “Tool Box”

It is important to understand how harvest regulations are used as “tools” to manipulate deer populations in order to balance deer populations at desired levels that are socially acceptable to all stakeholders and below biological carrying capacity. Although all deer harvest regulations influence harvest in some form, the impacts on the deer population are dependent on several factors. Deer populations grow or decline based on mortality and reproduction rates or the number of deer that die and are born annually. Because does directly influence population growth through reproduction, deer populations are driven by doe harvest. Although other sources of mortality can influence population growth including hemorrhagic disease and vehicle collisions, harvest drives deer populations in rural Missouri.

Antlerless Permits

In many areas of Missouri it is firearms antlerless harvest that is the driving factor of population growth. Statewide, 78% of all antlerless harvest occurs within the firearms season, with nearly 60% in the November portion alone. Also, over 60% of all deer taken on antlerless permits are taken on permittee firearm antlerless permits (not including landowner permits). Therefore, manipulating the number of firearms antlerless permits is an excellent “tool” to influence antlerless harvest, thus affecting population trends. While only a small portion of hunters harvest more than one antlerless deer annually, limiting the number of firearms antlerless permits per hunter will have population impacts over a few years and can have local impacts even earlier. However, it is important to view deer management not with annual goals, but instead long-term goals, because dramatic shifts in harvest result in more frequent and complicated regulation changes and frustrated stakeholders. Also, limiting the availability of firearms antlerless permits should help communicate the impacts of doe harvest on deer populations trends.

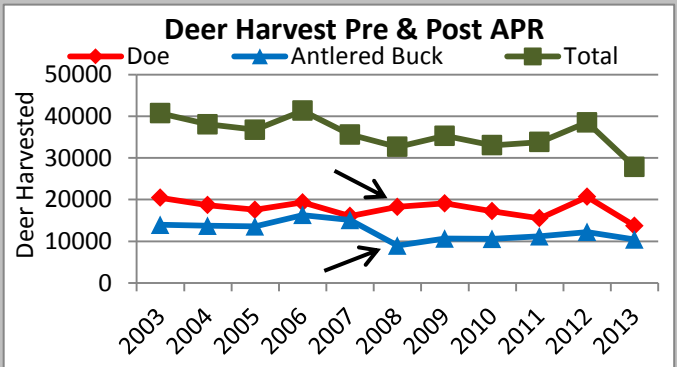


Antlerless Portion

Extending the hunting season, or having additional hunting days, does not always result in a higher harvest. Often hunters harvest the same number of deer once the days available to hunt reaches a certain limit. While a difference of a 2-day season versus a 10-day season will influence harvest totals, a 10-day season versus a 20-day season often does not result in a huge difference in harvest.

Antler Point Restriction

The primary goal of the antler point restriction (APR) was to lower deer densities by shifting harvest from bucks to doe there by increasing doe harvest. Reduced buck harvest which produced better buck age structure was a secondary benefit. The two might seem unrelated, but often hunters resort to harvesting a doe when they have to pass on young bucks that do not meet the APR.



Reduction in antlered buck harvest and slight increase in doe harvest because of implementing APR in 2008.

Other Regulations

When regulations have social impacts on hunting, thus affecting “how we hunt” there can be less intuitive population impacts. For example, a one buck annual limit (regardless of method) may decrease antlerless harvest because hunting activity may decrease once an individual fills their buck limit.

Deer Management Information

Deer Hunters are Deer Managers

Nearly every decision made by hunters and landowners in the field can influence the local deer population. This can range from choosing to harvest a deer, granting hunting access to your property, implementing habitat practices and so on. Sometimes what appear as simple decisions can have great impacts on population growth, adult sex ratio, and buck age structure. Too often hunters and landowners become frustrated with deer population trends, and do not realize their actions may be contributing to their frustration. Therefore, it is important to understand how deer harvest and habitat management can influence local deer populations to help achieve local deer management goals. Refer to *Deer Info for Hunters* section below for more information.



Successful archery hunt in Osage County, Missouri

Deer Cooperatives

Cooperatives, or coops, are not a new concept, as it is simply a group of landowners or hunters working together to improve the wildlife and habitat. In Missouri, coops focusing on deer management goals are becoming increasingly popular.

Deer can have home ranges over 1,000 acres, therefore, most local deer populations are influenced by several landowners and hunters. By working together, there is a greater chance of achieving shared deer management goals.

If you are interested in forming a cooperative or would like to learn more, contact Emily Flinn, MDC Deer Biologist, by calling (573)815-7901 ext-3619 or emailing emily.flinn@mdc.mo.gov

Deer Information for Hunters & Landowners

The University of Missouri (MU) Extension and Missouri Department of Conservation collaborated on a publication series devoted solely to deer management. This information was intended for landowners, hunters, and wildlife enthusiasts that want to learn more about deer and managing deer in Missouri.

There are seventeen science-based deer handouts that will guide landowners and hunters to better understanding and managing deer populations. Several publications explain how to obtain population information, such as sex ratio, density, fawn recruitment, and age structure. Topics also include habitat management and deer biology, including antler growth, ecology, and aging deer by jawbones.



These publications are free and available on MU Extension's website: <http://extension.missouri.edu/deer>

Chronic Wasting Disease

Chronic wasting disease (CWD) belongs to a group of diseases known as transmissible spongiform encephalopathies (TSEs) which cause the brain to deteriorate in cervids such as deer, elk, and moose. CWD is always fatal, but can take months or years before symptoms appear, which can include changes in behavior, extreme weight loss, excessive salivation, stumbling, and tremors. During the period between infection and clinical signs, infected cervids can spread CWD by contacting other cervids and via excrements (e.g., feces, urine, and saliva) in the environment. CWD is also spread through the natural movements of infected cervids and movement of infected captive cervids. Since infected carcasses can also spread the prion, indirect transmission may occur through carcass movement by hunters. To determine if a cervid is CWD-positive, a laboratory test of the brain stem or lymph node tissue is required.

Current research indicates that CWD cannot be spread to domestic livestock, such as sheep or cattle. Also, the Center for Disease Control (CDC) has found no evidence that CWD can infect people. While there is no scientific evidence that CWD is transmissible to humans or animals other than deer and other cervids, health officials do not recommend the consumption of the parts (brain, spinal cord, eyes, spleen, and lymph nodes) where the prions accumulate.

CWD in Missouri: Update

Missouri's first cases of CWD were detected in 2010 and 2011 in captive deer at private big-game hunting preserves in Linn and Macon counties. In January of 2012, the first free-ranging CWD-positive deer were detected in Macon County through the sampling of two hunter-harvested deer. MDC implemented several management actions to help limit the spread and prevalence of the disease within the CWD Containment Zone (Adair, Chariton, Linn, Macon, Randolph, and Sullivan counties) including the removal of the antler point restriction, banning feeding/consumable attractants of deer, and discouraging the transport of cervid carcasses. The Antler-Point Restriction (APR) was removed because it protects yearling males and promotes an older age structure in bucks, which often have higher infection rates than females. Also, the dispersal of yearling males from their birth area in search of new territory is one of the primary means of CWD spread across the landscape. Additionally, the placement of feed, minerals, and other consumable deer attractants were prohibited because activities that artificially concentrate deer increases the likelihood of disease transmission from animal to animal or soil to animal. In addition to statewide routine sampling, MDC increased efforts to sample hunter harvested deer in the Containment Zone and implemented targeted culling in the 30-square mile Core Area to increase testing and reduce deer densities.

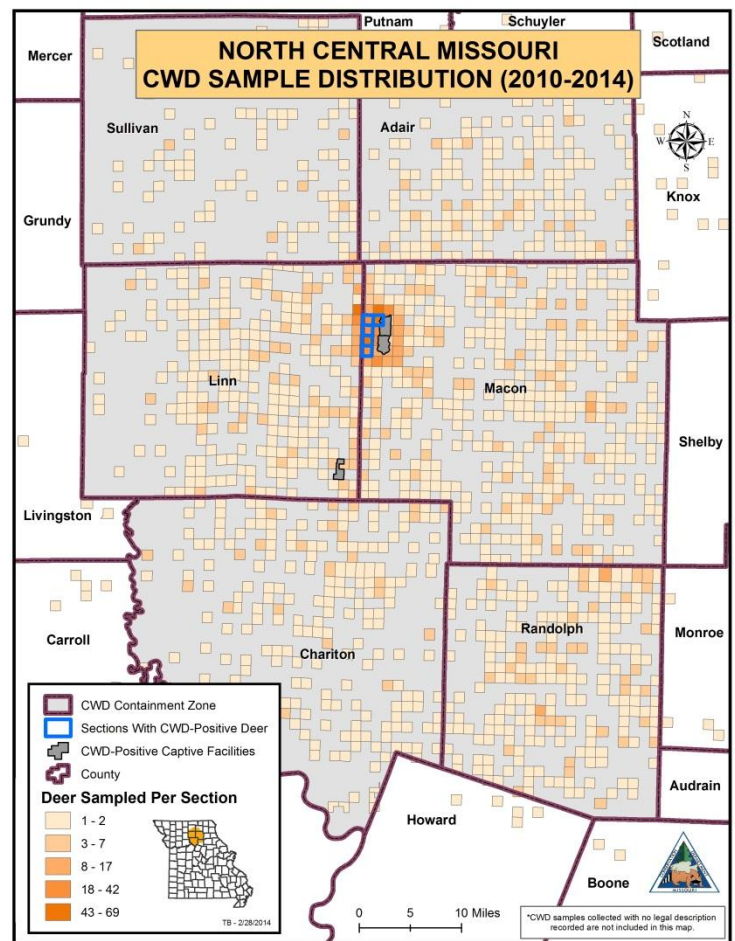


Figure 10. CWD sample distribution within the Containment Zone and sections where free-ranging CWD-positive deer have been

In total MDC has tested more than 40,000 free-ranging deer for CWD from all Missouri counties since 2002. As of spring 2014, CWD has been confirmed in 11 captive deer and 10 free-ranging deer within two miles of a CWD-positive captive facility in Macon County.

Hemorrhagic Disease

Hemorrhagic disease (HD), which includes both the EHD and bluetongue viruses, is spread by midges (biting “no-see-um” flies) and is completely unrelated to chronic wasting disease (CWD) as described on page 21. Most deer infected with HD in Missouri die within two weeks. Once infected, but before death, deer may exhibit the following symptoms: disorientation, lack of natural fear of humans, foaming at the mouth and/or nose, high fever, and swollen jaw. While a small portion of Missouri deer survive the HD virus, they may die weeks to months later due to secondary infections. However, some deer can survive HD completely with the only residual symptom being sloughed hooves, often noticed during the hunting season. These viruses do not affect humans or non-ruminant animals like dogs and cats. While infrequent, HD viruses can infect and cause symptoms in some domestic livestock species, including cattle and sheep.

Summers with high temperatures and drought conditions can intensify an HD outbreak, as was the case in 2012 in Missouri. This is because the midges that carry the virus breed around mud flats, which become more prevalent during hot, dry summers. Additionally, deer visit these increasingly diminishing water sources more frequently during these extreme conditions, increasing their potential exposure to the midges. Once infected, deer often develop a high fever and seek out water sources, often dying in close proximity to water. Deer that die due to HD do not pose a threat to the further spread of HD.

HD outbreaks often are localized, meaning they can significantly affect a small area, but another area within the same county might not have any mortality. Therefore, it is nearly impossible to estimate HD mortality rates until a few years after an outbreak when harvest data can reveal the impact. Reports made by the public concerning deer with symptoms of HD are very valuable in determining where an outbreak has occurred and the general severity, but unfortunately are not sufficient for estimating mortality rate. Therefore, if landowners and hunters notice a decline in deer sightings or have found carcasses suggesting HD mortality, they should consider harvesting fewer does to allow the population to recover.



Foaming at the mouth and nose is a typical symptom of hemorrhagic disease.



Deer infected with HD are often uncoordinated, therefore are unable to stand or walk.



Often noticed by hunters, sloughed hooves are a classic residual symptom of hemorrhagic disease.

Deer Program Research Projects

Research projects produce important information that is incorporated into management decisions on scales ranging from local levels to statewide, and are consequently essential to the Deer Program's ability to manage for a sustainable, healthy deer herd at desired population levels for all stakeholders. The following research projects will have broad and diverse application to deer management in Missouri.

Hunting Regulation Effects on Hunter Perceptions and Deer Populations on Conservation Areas

Recently, we completed a research project to track changes in deer and hunter numbers and measure hunter attitudes toward deer hunting regulations on conservation areas.

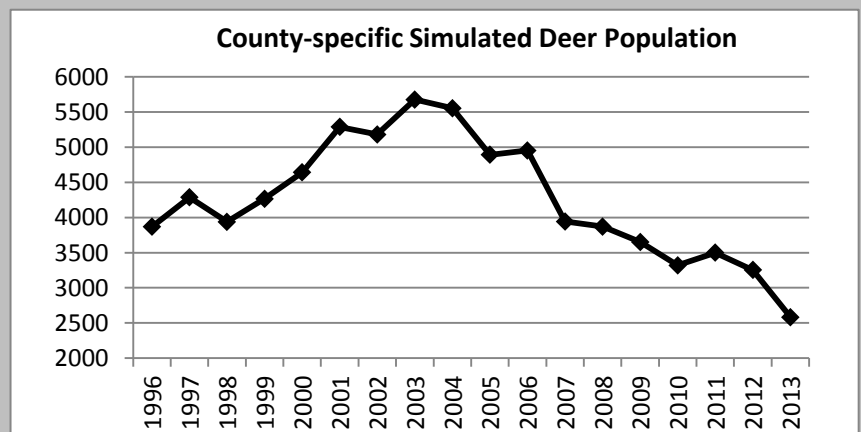
Study results indicate that good total deer numbers, good buck numbers, and satisfaction with deer hunting regulations were the most important factors affecting hunter selection of an area. Other factors, such as being close to home, having a tradition for hunting an area, and camping opportunities were less important overall but their importance varied depending on the area deer hunting regulation. Participants were more satisfied with the number of deer, the regulations, and the hunting experience on Archery Methods Only and Archery & Muzzleloader Methods Only areas and least satisfied on Statewide regulation areas. Respondents hunting Archery Methods and Archery & Muzzleloader Methods areas were most likely to return to the same area to hunt deer the following year.

This is confirmation that for most hunters the opportunities to see and harvest deer are important and affect selection of an area to hunt and their overall hunting satisfaction. In general, areas with more restrictive regulations produce better opportunities to see deer and more satisfied hunters. However, for some hunters the opportunity to go deer hunting and use whatever permits are available in the county is most important. Therefore, it is important for MDC to provide a diversity of hunting opportunities on conservation areas.

Investigating a New Method for Modeling Deer Populations in Missouri

In collaboration with the University of Missouri and the University of Washington, MDC is investigating a new method of modeling deer populations in Missouri called Statistical Population Reconstruction (SPR). This is an exciting endeavor for the MDC Deer Program because population models are an important component when assessing deer populations, considering regulation changes, and determining the impacts of potential regulations. This new method provides several improvements over current population models that will increase the model's accuracy, strengthening the foundation for monitoring regional and county-specific deer populations.

This modeling approach uses a variety of data that MDC currently collects including age at harvest information, hunter effort, and harvest data, and some additional information that will be collected in future deer research projects. Missouri will be the first state to implement SPR on a statewide basis for any animal, but specifically for deer and turkey.



Modeling Chronic Wasting Disease Dynamics and Impacts on White-tailed Deer in Missouri

In collaboration with the University of Missouri, MDC has implemented a research project to model CWD distribution and potential impacts on Missouri's deer population. In north-central Missouri where CWD has been detected, we plan to model distribution and prevalence of CWD currently and in the future given various scenarios. This will allow us to model potential impacts of CWD on the deer herd, including survival and abundance. Additionally this information may provide insight on management adjustments that could facilitate a reduction in CWD distribution and prevalence.



CWD is a fatal neurological disease that poses a serious long-term threat to the health of the free-ranging deer population.

In addition to the application to north-central Missouri, this study will allow us to develop predictions and management strategies in the event that CWD is introduced to another location in the state. It will allow comparisons of various impacts management practices may have on CWD prevalence and distribution. Also, the study will provide the ability to compare various monitoring strategies, thus increase our ability to detect CWD early so that management efforts can be effective, while ensuring the efficient use of resources.

Survival, Recruitment, and Movement Patterns of White-tailed Deer in Missouri

The MDC has proposed a study in collaboration with the University of Missouri to evaluate survival, recruitment, and movement patterns of deer in two different regions of Missouri. This information will enhance the Deer Program's ability to estimate populations and guide disease management protocols, and provide hunters and landowners with valuable management information.

Over the past 20+ years landscape level changes in habitat condition, deer densities, harvest vulnerability, hunter selectivity, and predator populations have resulted in unknown changes in white-tailed deer survival, thus potentially affecting MDC's ability to accurately estimate deer populations. The information generated will contribute to population models accurately reflecting current deer populations and guiding harvest regulation recommendations and management decisions.

Additionally, movement information derived from the study will be incorporated into current and future disease management plans. Movement patterns (i.e., dispersal distance and home range size) affect the spread and spatial distribution of diseases, including CWD and bovine tuberculosis. This research project will provide regional information on deer movement patterns for use in developing disease management strategies, thus increasing MDC's and Missouri citizens' confidence that disease management actions are being implemented on an appropriate scale to be effective and yield desired results.





Missouri Department of Conservation

NEBRASKA DEER STATUS REPORT

2014 Midwest Deer & Wild Turkey Group

YMCA Trout Lodge
Potosi, Missouri
September 9-12, 2014

Submitted by the State of Nebraska
Nebraska Game and Parks Commission - Wildlife Division
Big Game Program Manager: Kit Hams

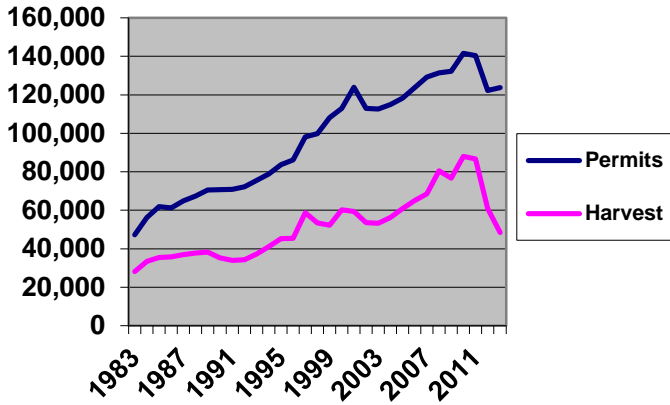
Collection and Analysis of Deer Harvest Data - 2013

Project Objective: To gather information related to the status, distribution, and abundance of wildlife populations in Nebraska, and to develop effective management practices and programs for these species.

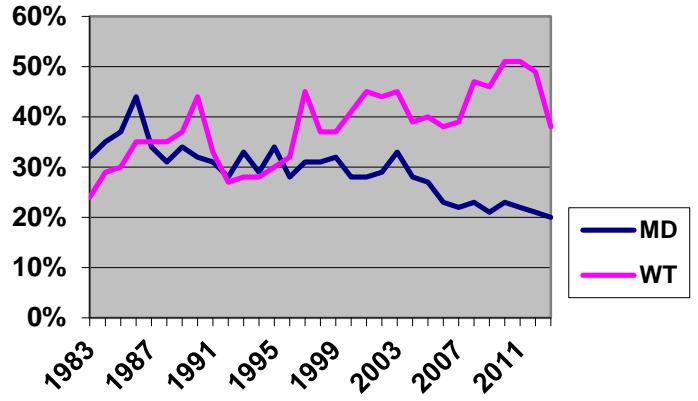


Nebraska 2013 Deer Season Summary

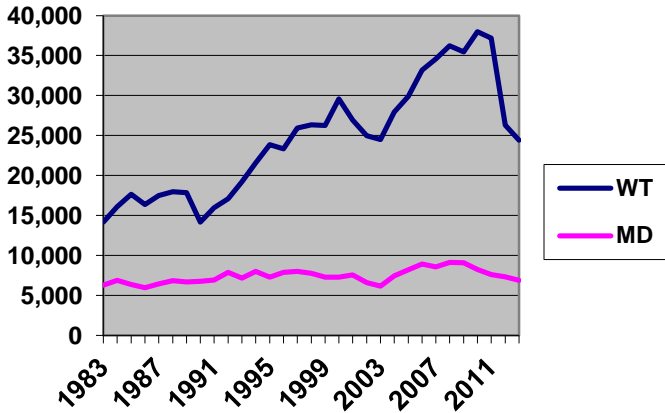
Deer Permits & Harvest 1983-2013



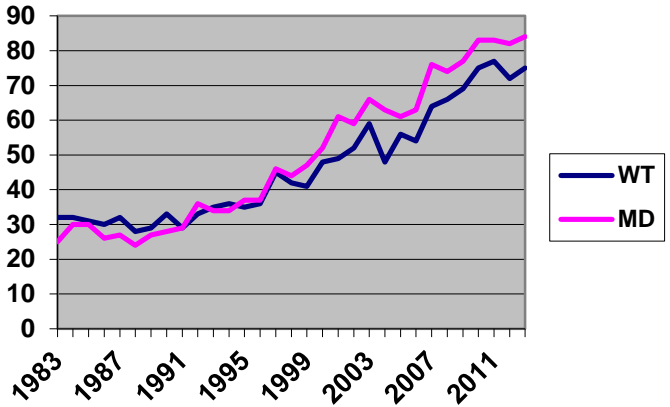
% Antlerless of Total Kill 1983-2013



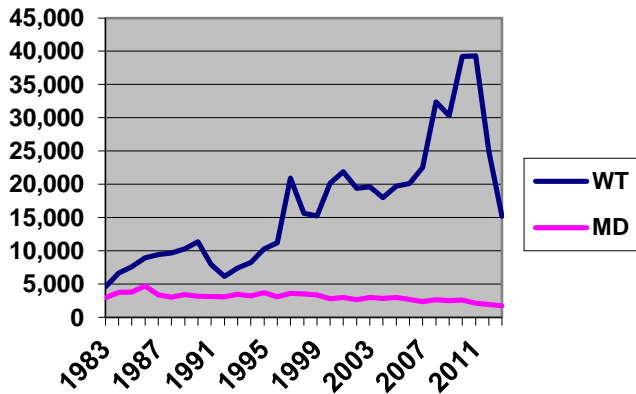
Buck Harvest 1983-2013



Age of Bucks - % Age 2+ 1983-2013



Antlerless Harvest 1983-2013



Nebraska: 2013 Deer Seasons (Dates, Permits & Harvest)

2013 Seasons	Length	Dates	Permits	Total Kill	Whitetail Antlerless Kill
Nov. Firearm	9 days	Nov. 16 – 24	43,207	21,563	4,544
Statewide Buck	9/108 days	Sept. 15 – Dec. 31	10,582	2,946	23
SCA Antlerless	126 days	Sept. 15 – Jan. 18	16,671	5,802	4,862
Archery	108 days	Sept. 15 – Dec. 31	15,878	3,647	531
Landowner	126 days	Sept. 15 – Jan. 18	12,431	5,522	1,351
Muzzleloader	31 days	Dec. 1-31	7,365	1,452	449
Youth	126 days	Sept. 15 – Jan. 18	12,113	4,622	854
River Antlerless	126 days	Sept. 15 – Jan. 18	5,500	2,685	2,570

2013 Season Highlights

Permits Issued:	123,747 permits sold	13% below peak in 2010
Harvest:	48,345 deer	45% below peak in 2010
	24,401 WT bucks	36% below peak in 2010
	15,213 WT Antlerless	61% below peak in 2011
	6,876 MD bucks	25% below peak in 2008
	1,735 MD antlerless	68% below peak in 1957
	84% MD bucks age 2+	Record high
	75% WT bucks age 2+	2nd highest on record
	39% hunter success	2nd lowest on record

Mule deer MD herds are lower than desired in 8 of 14 DMU
 8 units: 32-67% decline in buck kill
 4 units: 11-22% decline in buck kill
 2 units: 8-17% increase in buck kill
 Antlerless harvest was 20% of total harvest in 2013
 45% of bucks were age 3 or older (3,280 MD aged)
 MD antlerless harvest will be reduced in 2014

Whitetail WT herds are lower than desired in 13 of 18 DMU
 6 units: 42-63% decline in buck kill since 2011
 7 units: 29-37% decline in buck kill since 2011
 5 units: 8-22% decline in buck kill since 2011
 Antlerless harvest was 38% of total harvest
 35% of bucks harvested in were age 3 or older (11,429 WT aged)
 WT antlerless harvest will be reduced in 2014

2014 Season - NEW:

September 1 archery opener “velvet buck season” (240 & 190 MD bucks)
 January 15 antlerless season closure (9 antlerless days removed)
 18,000 Antlerless Bonus tag removed: 28,000 in 2014 vs. 120,000 in 2012
 Nonresident permit quotas in one mule deer unit (1st time event for Nebraska)

2014 North Dakota Deer Project Report for Midwest Deer and Turkey Study Group

Bill Jensen, Big Game Biologist
 North Dakota Game and Fish Department
 100 North Bismarck Expressway
 Bismarck, ND 58501
 E-mail: bjensen@nd.gov Phone: 701-220-5031

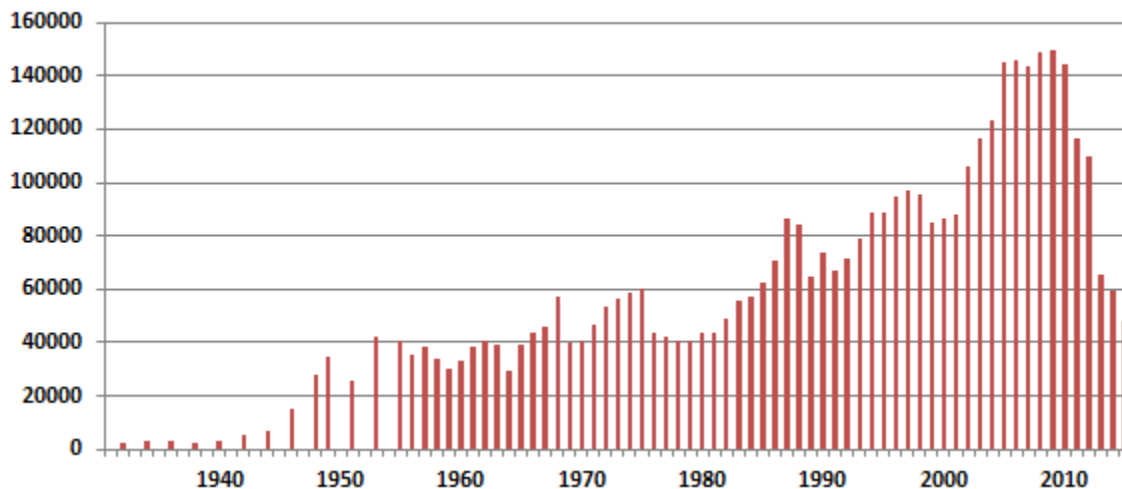
I. Current (2013) Deer Harvest

Season	License Issued	White-tailed Deer Harvested	Mule Deer Harvested	Season Dates
Youth Gun ¹	4,316	2,171	183	20/09/2013 to 29/09/2013
Archery	23,001	5,351	277	30/08/2013 to 05/01/2014
Regular Deer-Gun	57,743	25,914	2,424	8/11/2013 to 8/24/2013
Muzzleloader	1,166	357	0	29/11/2013 to 15/12/2013
Total	86,226	33,793	2,884	

¹Unsuccessful youth hunters may also hunt during the regular deer gun season.

II. Historical Harvest

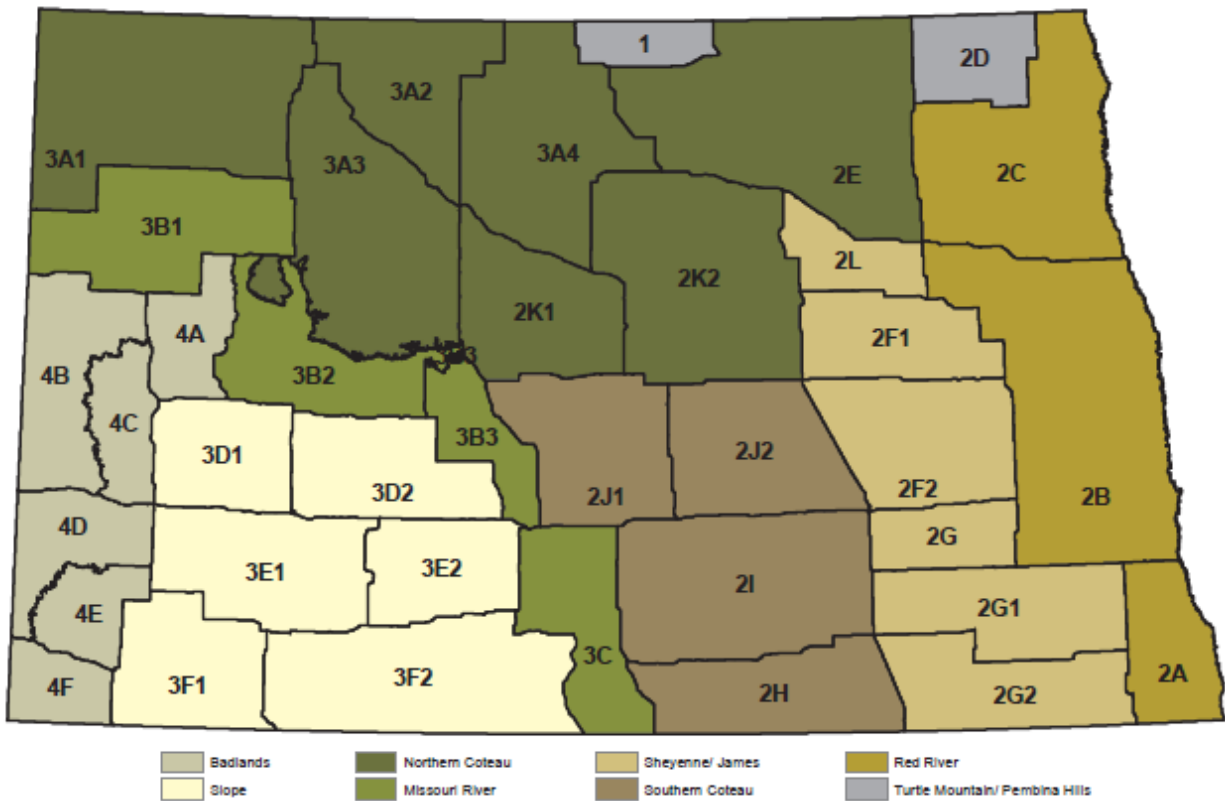
Deer Licenses Allocated (1931-2014)



III. Population Estimate

We use a series of population indices to set harvest rates. We do not attempt to estimate the statewide deer population.

IV. North Dakota Deer Hunting Units and Major Management Regions



V. Regulation/Legislation Changes/Management Notes

The 2014 North Dakota deer hunting season will include 48,000 licenses, 11,500 fewer than 2013 and the lowest number since 1980. A concurrent season will not be held again in 2014, and hunters will be allowed only one license for the gun season.

Management Notes:

Even after five years of reducing gun licenses, harvest and survey data revealed that deer populations are still below management objectives in most units. The statewide hunter success rate in 2013 was 55%, which is lower than 2012 (63%), and well below our goal of 70%. The winter of 2013-2014 was long and colder than normal, but adequate snow cover needed for aerial surveys only occurred in the northeastern part of the state (hunting units 2C and 2D). Aerial survey results showed that deer numbers were down 21% in 2C and 29% in 2D. Hunter observation and harvest data indicate deer numbers are still declining, especially across the eastern part of the state.

Deer numbers remain below objectives due to prolonged effects of severe winters during 2008-2010, which not only increased adult mortality but also reduced fawn production. The extreme winter conditions followed nearly a decade of aggressive deer management that featured large numbers of antlerless licenses in most units. In addition, the northeastern part of the state experienced severe winters during 2012-2013 and 2013-2014 which continues to impede population recovery. Further, high quality deer habitat continues to be lost statewide (e.g., conversion of CRP acres to cropland, removal of shelterbelts, burning and draining of cattail sloughs, unprecedented oil development in the badlands) and will limit the potential for population recovery. Currently, all hunting units in the state are below management goals except in 3F1, 3F2, and 4F. The decrease of licenses in 2014 is necessary to encourage deer populations to increase toward management goals.

The 2014 badlands mule deer spring index increased by 19% from 2013. This is the second consecutive year of population growth following two consecutive years with no antlerless harvest and improved fawn production in 2013. These two years with population increases follow a 5 year population decline with the badlands mule deer spring index decreasing by 49% and record low fawn production following the winters of 2008-2010. A conservative management approach will continue for mule deer in the badlands for 2014. No antlerless mule deer licenses will be issued for the 2014 deer season in hunting units 3B1, 3B2, 4A, 4B, 4C, 4D, 4E, and 4F. This restriction pertains to sportsmen gun licenses, resident and non-resident any deer bow licenses, gratis licenses, and youth licenses.

Challenges affecting long-term mule deer population recovery include: below average fawn production and survival prior to winter, decreased habitat quality due to increases of crested wheatgrass and brome combined with continued encroachment of Rocky Mountain juniper, unprecedented oil development, and an increased number of mountain lions in the northern badlands.

- * Total licenses available for the 2014 regular season are 48,000. This is a decrease of 11,500 licenses from 2013.
 - Any Antlered licenses reduced by 3,900
 - Any Antlerless licenses reduced by 6,550
 - Antlered white-tailed deer licenses reduced by 250
 - Antlerless white-tailed deer licenses reduced by 1,000
 - Antlered mule deer licenses increased by 200
- * Most of the reduction in licenses occurred in the eastern part of the state.
- * A total of 1,350 antlered mule deer licenses will be available in 2014; however no antlerless licenses will be issued in hunting units 3B1, 3B2, 4A, 4B, 4C, 4D, 4E, and 4F. This is an increase of 200 mule deer licenses from 2013.
- * A total of 932 muzzleloader licenses will be available in 2014. The total is comprised of 466 antlered white-tailed deer licenses and 466 antlerless white-tailed deer licenses. This is a decrease of 270 muzzleloader licenses from 2013.
- * In 2014 there will be 134 “I” licenses available for the youth deer hunting season. This is an increase of 19 licenses from 2013. “I” licenses are limited in number and are valid for any deer, except antlerless mule deer, in units 4A, 4B, 4C, 4D, 4E, 4F, 3B1, and 3B2. There are unlimited “H” youth deer hunting licenses that are valid for any deer statewide except mule deer in the above restricted units.
- * A total of 172 nonresident any deer archery licenses are available for 2014. This is a decrease of 8 any deer archery licenses from 2013. The number of nonresident any deer archery licenses will increase to 202 in 2015.

VI. Urban/Special Herd Reduction Deer Seasons

Three special concurrent experimental deer bow seasons are proclaimed for portions of the City of Bismarck, and private land in Burleigh County located adjacent to the City of Bismarck. The private land in Burleigh County is described as follows: starting where the southwest boundary of the city limits of Bismarck joins the east bank of the Missouri River, then following the city limits of Bismarck easterly to the point where it meets the west bank of Apple Creek in the northeast one-quarter of Section 26, Township 138 North, Range 80 West, then following the west bank of Apple Creek in a general southwest direction to its junction with the north boundary of Apple Creek Wildlife Management Area (WMA) and then west and south along the WMA boundary to the Missouri River, then following the east bank of the Missouri River to the point of origin. This does not include the NDDOCR property referred to in Section 4(E).

Hunters who desire to hunt within the city limits of Bismarck must receive a trespass permit from the Bismarck Chief of Police (701-223-1212), prior to being issued up to three special deer bow licenses from the Game and Fish Director. Hunters will be restricted to those dates and locations specified on the trespass permit(s). No orange clothing is required when hunting within the Special Herd Reduction areas unless required by city officials within city limits. In

addition, hunters may use their Deer Bow license during the Deer Bow season (August 29, 2014 through January 4, 2015) after obtaining a trespass permit. In the area outside the city limits of Bismarck no trespass permit is needed. These licenses are available only at the North Dakota Game and Fish Department headquarters in Bismarck.

VII. Deer Management Assistance/Crop Damage Harvest

Depredation Assistance Program - provides funding for activities used to alleviate/minimize damage to private livestock feed supplies caused by big game animals (manpower, technical assistance, temporary fencing, repellents, scare devices, and deer-proof hay yard fences). Payments will not be made for damage caused by wildlife. Since 2005 the department has been facilitating a program that couples producers that have chronic deer depredation problems with hunters interested in harvesting antlerless does. Interested hunters enter their contact information on our website. Landowners determine how many hunters they are willing to host. The predetermined number of hunters are randomly selected from the website and sent a letter with the phone number of a landowner wanting deer removed. Over the past decade the number of landowners in the program has gradually declined as deer depredation problems have been reduced and hunters have developed relationships with landowners.

VIII. Disease Issues

Chronic Wasting Disease

Background: In 2007 the NDG&F revised their hunter-harvested deer CWD surveillance strategy to increase sampling efficiency and efficacy. Six surveillance units have been established with sampling occurring in two surveillance units each year (See Map 1). This allows collection and sampling efforts to be focused in one-third of the state and for all surveillance units to be sampled over a three year period. All age classes are sampled for CWD.

2013 Surveillance: In 2013 the NDG&F collected and submitted 141 samples for CWD testing from targeted surveillance animals and 1569 from hunter harvested animals (See Table 1 for breakdown by species). Targeted surveillance occurs statewide and continues year-round. Samples from free-ranging cervids which exhibit signs consistent with CWD, died of unknown causes, were road killed, or were removed due to destruction of captive cervid facilities are considered targeted.

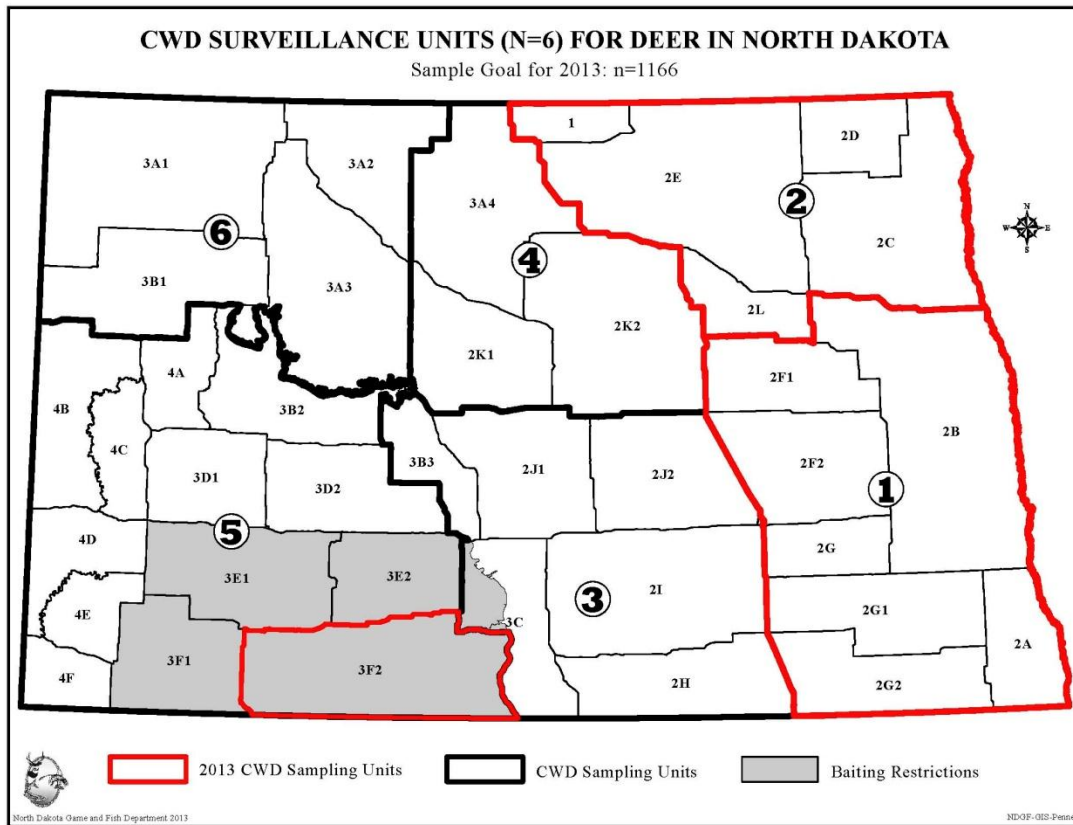
The goal for the 2013 hunter-harvested surveillance was to collect 916 deer samples (458 from 2 units) from eastern ND, which should allow for detection at 1% prevalence with 99% certainty. In addition a special CWD surveillance unit has been established (see Map 1) to enhance surveillance in Deer Hunting Unit 3F2 where 3 mule deer had tested positive for CWD since 2009.

An adult mule deer buck and an adult white-tailed buck tested positive for CWD. Both animals were from DHU 3F2 (see Map 2 for locations)

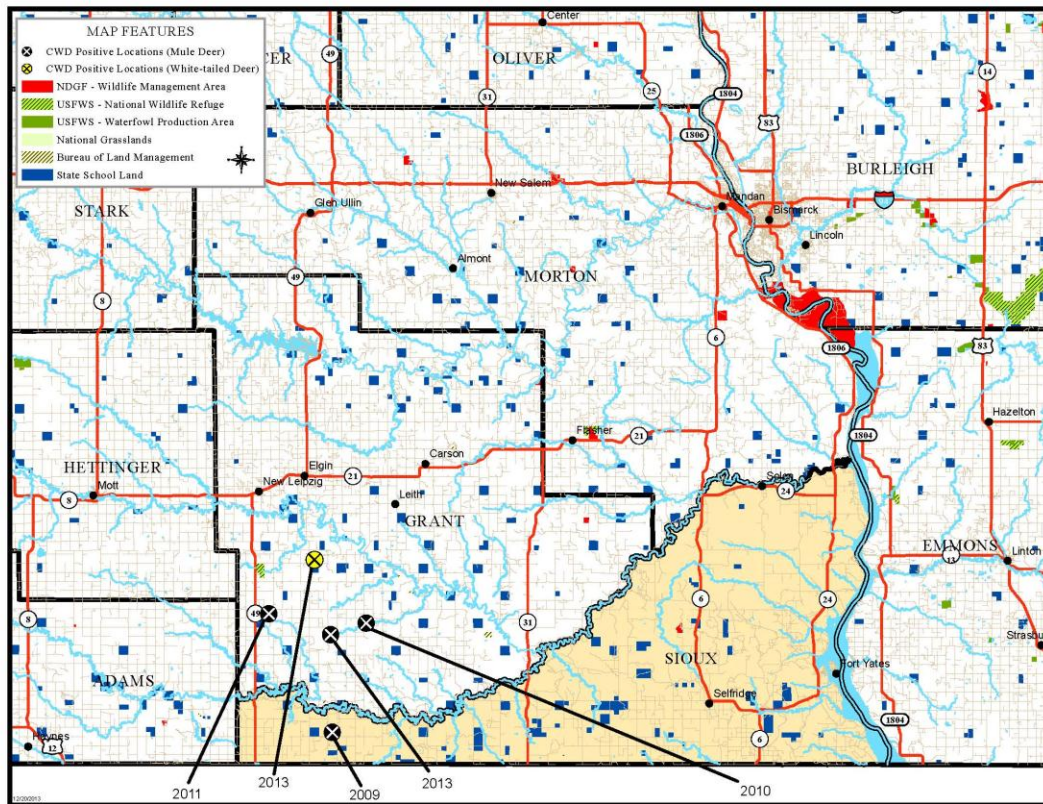
Table 1. Free-ranging cervids sampled for CWD as part of Hunter Harvested and Targeted Surveillance in ND

Species	Number Tested in 2013 HH (TS)	Number Collected as of April 1, 2014
White-tailed Deer	1348 (80)	1
Mule Deer	174 (11)	7
Elk	25(2)	0
Moose	22(38)	5
Total	1569(141)	13

Map 1. NDGFD CWD Units Sampled Fall 2013

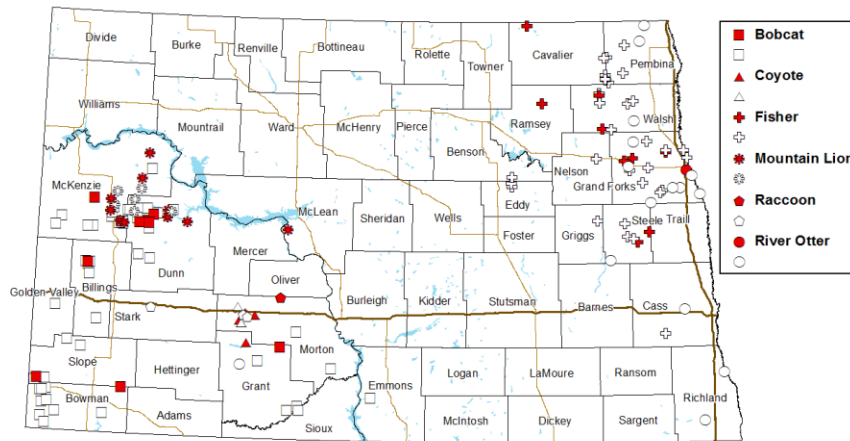


Map 2. ND CWD Positives Map



Canine Parvovirus

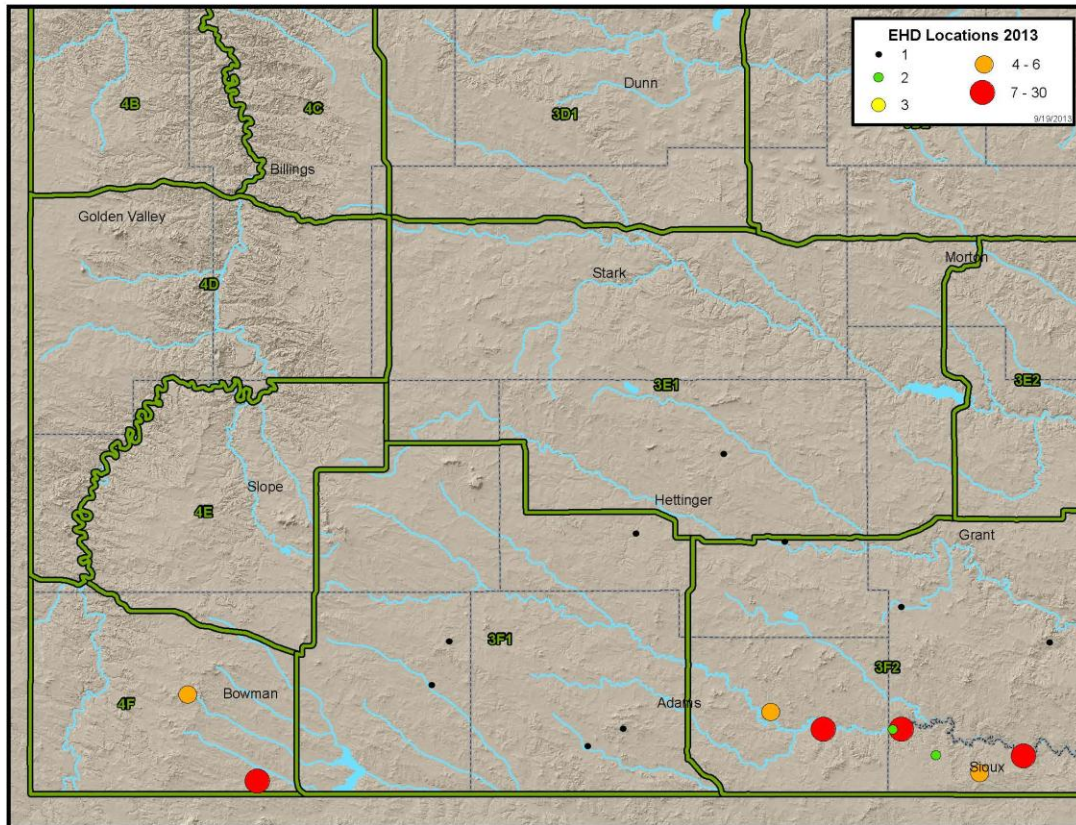
Samples were collected from marten, fisher, river otter, bobcat, mountain lion, raccoon, red fox and coyote for canine parvovirus as part of a collaborative effort with researchers at Cornell University. Of the 192 carnivores submitted for testing 52 tested positive for canine parvovirus (fishers, otters, mountain lions, coyotes, raccoons and bobcats) and one bobcat was positive for feline panleukopenia virus.

Map 3. Canine Parvovirus Distribution**Bovine Tuberculosis**

Surveillance for bovine tuberculosis in North Dakota is conducted via hunter harvested animals and targeted surveillance animals on a yearly basis. In addition to this samples are taken for bovine TB testing from all targeted surveillance animals. A total of 141 samples were collected for TB testing from cervids in 2013. Test results on these animals were all negative. In the fall of 2014 hunter harvested surveillance of deer harvested in Deer Hunting Unit 3B3 will be conducted in response to positive tests in livestock and farm workers.

Hemorrhagic Disease in Cervids

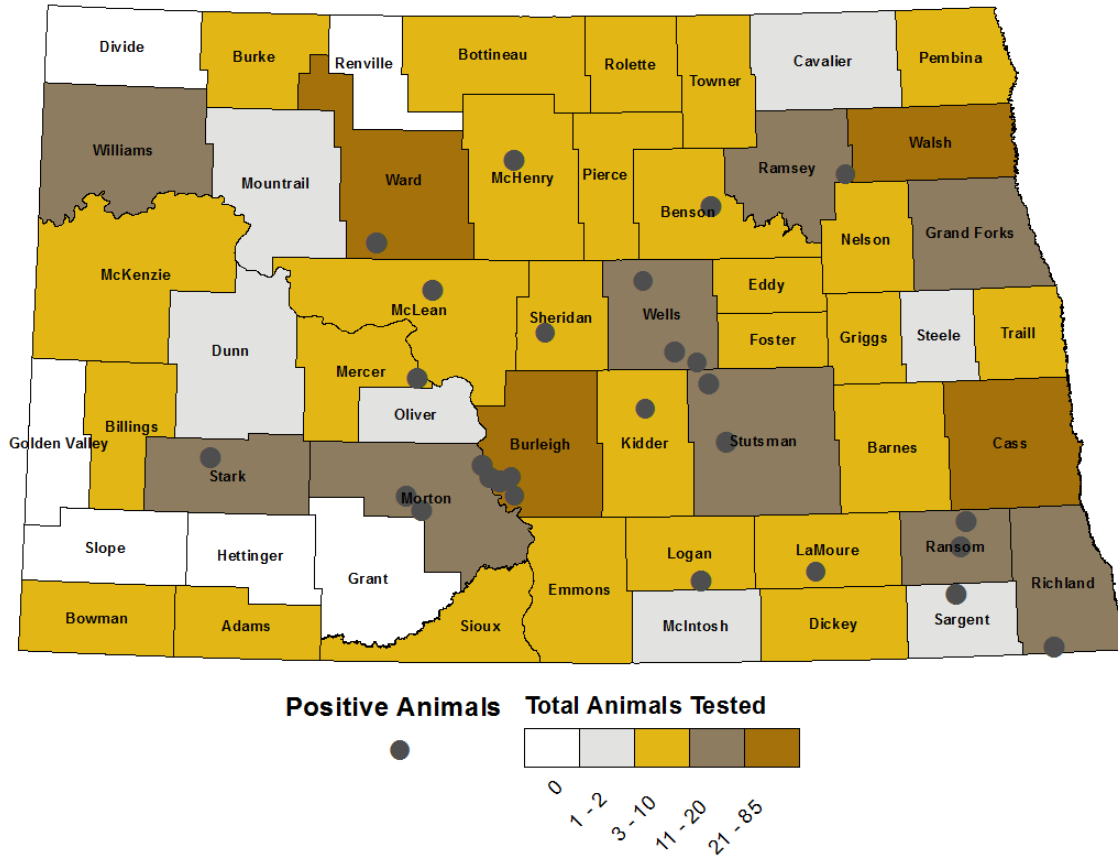
EHD is considered endemic in the area south and west of the Missouri River in North Dakota. Thirty one reports of dead or dying deer consistent with EHD signs were reported in the Fall of 2013. The total estimated number of dead from these reports was ~126. A total of 9 animals were randomly collected and sampled throughout the reporting area. All 9 had gross clinical signs consistent with EHD on post-mortem examination and all 9 tested positive for EHDV PCR. In addition several domestic cattle herds reported animals having clinical signs consistent with EHDV and multiple bulls and cows tested positive for EHDV-2.

Map 4. EHDV Activity 2013**Rabies**

In 2013 rabies surveillance was conducted by the ND Department of Public Health and NDSU Veterinary Diagnostic Laboratory on suspect animals that involved human and domestic animal exposures.

In 2013 a joint effort to increase rabies surveillance from wildlife was conducted by NDGFD, NDPHD, NDSU VDL and USDA-WS. Surveillance animals will be collected from routine trapping efforts performed by USDA-WS and NDGFD and through collection of road-kill and removal of neurologic wild animals. Sampling goals are set at 600 animals statewide. All positives will be variant typed by the CDC.

Map 5. ND Rabies Activity 2013



In 2013, three bats, 4 domestic cats, 8 cows, 1 horse, 1 pig, and 20 skunks tested positive for rabies in ND. Additional archived samples from trapper/hunter harvested animals are still being processed at this time.

IX. Research

An evaluation of historical mule deer fawn recruitment in North Dakota

Executive Summary

Simone Ciuti, William F. Jensen, Scott E. Nielsen, Mark S. Boyce

Since 1962 mule deer surveys have been conducted in North Dakota. Over the last 50 years the general pattern has been that mule deer numbers have increased while fall fawn recruitment rates have declined. However, in recent years both mule deer numbers and fall fawn recruitment rates have decreased to levels well below the long-term average, raising concern about recruitment and population trends. Indeed, fawn production during the period 2008-2012 is the lowest documented since demographic surveys began in 1962. These recent declines in abundance and recruitment of mule deer are coincident with substantial landscape changes attributable to energy development in mule deer habitats especially in the Little Missouri badlands.

The mule deer is one of the most sought after game species in North Dakota. In the past approximately 10,000 hunters applied during the first drawing for about 2,500 antlered mule deer licenses. In 2008, a total of 2,700 antlered mule deer hunting licenses were available for the badlands hunting units. Because surveys indicated reduced mule deer numbers, only 850 antlered mule deer licenses were allocated for these badlands hunting units in 2012. As a result of these declines, North Dakota Game and Fish Department is frequently questioned about the impacts of predation, winter weather, hunting pressure, range condition and, most recently, energy development. To find answers to these questions and to explain recent declines in mule deer abundance, a research project was initiated using one of the most complete time-series of wild Cervids in North America.

Seasonal climate can influence deer recruitment contributing to the population dynamics of large herbivores. Winter weather conditions were found to explain a consistent portion of the variability in fall fawn recruitment. Indeed, models that included both weather effects and the long-term trend explained about 71% of total variability. Average minimum temperature recorded during winter prior to the birth of fawns was the weather factor with the strongest influence on fawn recruitment. Fall fawn:doe ratios ranged from 0.85 when average minimum temperatures during the prior winter were about -16°C in contrast with 1.2 fawns:female when minimum temperatures were about -8°C. Mechanisms for this pattern are surely manifested through the nutrition and energy balance of the doe and if she is able to give birth, the resultant condition of the fawn.

We also showed that the North Pacific index (ocean oscillation) was a good predictor of mule deer fawn recruitment. This result is quite remarkable given the distance between North Dakota and the Pacific Ocean, yet these decadal oscillations influencing climate patterns are important because they allow wildlife managers to anticipate patterns that could be incorporated in management plans. In practice, temperature recorded during a given winter is a good predictor of fawn recruitment expected during the following fall, allowing yearly harvest allocations to be adjusted. Even more important from a deer management perspective, we found that after accounting for winter temperatures the density of oil and gas wells and predator pressure by coyotes were important drivers of fall fawn recruitment, explaining about 85% of total variability. Our models predict little effect of increased coyote density on fawn recruitment where oil and gas wells are absent; and likewise, our models predict little effect of increased well

density on fall fawn recruitment if coyotes are absent. However, industrial development and predation interact with each other affecting fall fawn recruitment in the North Dakota badlands. The lowest recruitment was recorded in areas where both coyote and well densities were high. Energy developments directly (well-pad surface) and indirectly (2-3 km from the well site) lead to habitat loss. We show, for the first time, how coyote densities and oil and gas development could have substantial consequences to fall mule deer fawn recruitment when occurring in an interacting or cumulative fashion.

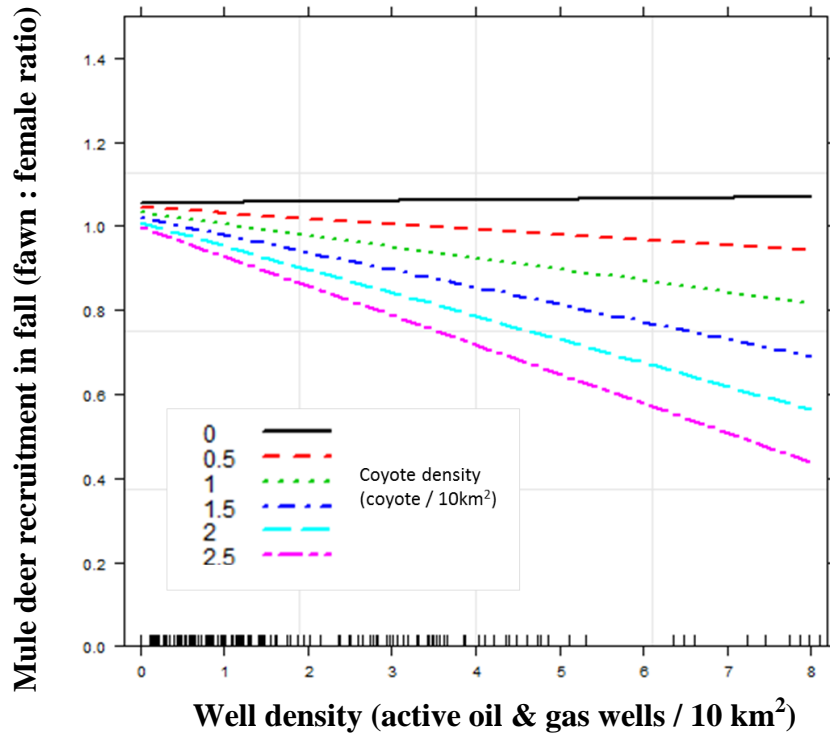
Well density (active oil & gas wells / 10 km²)

	0	1	2	3	4	5	6	7	8
0	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
0.25	1.03	1.03	1.02	1.01	1.01	1.00	0.99	0.99	0.98
0.5	1.03	1.01	1.00	0.98	0.97	0.96	0.94	0.93	0.91
0.75	1.02	1.00	0.98	0.95	0.93	0.91	0.89	0.87	0.85
1	1.01	0.98	0.95	0.93	0.90	0.87	0.84	0.81	0.78
1.25	1.01	0.97	0.93	0.90	0.86	0.82	0.79	0.75	0.71
1.5	1.00	0.96	0.91	0.87	0.82	0.78	0.74	0.69	0.65
1.75	0.99	0.94	0.89	0.84	0.79	0.74	0.69	0.63	0.58
2	0.99	0.93	0.87	0.81	0.75	0.69	0.63	0.57	0.52
2.25	0.98	0.92	0.85	0.78	0.72	0.65	0.58	0.52	0.45
2.5	0.98	0.90	0.83	0.75	0.68	0.61	0.53	0.46	0.38
2.75	0.97	0.89	0.81	0.72	0.64	0.56	0.48	0.40	0.32
3	0.96	0.87	0.78	0.70	0.61	0.52	0.43	0.34	0.25

When predator pressure and well density are absent in the North Dakota badlands, fawn : female ratio is above 1 with fluctuations due to winter harshness (milder winters, higher recruitment). However, a simultaneous increase of both oil & gas well density and coyote density resulted in a reduction of fawn recruitment to values lower than 0.40 fawns : female.

[numbers within the table are predicted fawn : female ratios]

We emphasize that coyote density by itself does not affect fall fawn recruitment, and thereby predator control is not an effective long-term solution. Resilience of mule deer populations could therefore be weakened by the interaction of energy development with that of the interactions between predator and prey. The ultimate cause behind mule deer decline is still related to alteration in habitats. If habitat is adequate, predator-caused mortality should be compensatory. The ultimate cause for the decline in recruitment is therefore habitat loss and fragmentation caused by industrial development. This concentrates mule deer into smaller patches of habitat where the animals are more vulnerable to predation on fawns. Management to ensure persistence of mule deer in western ND should focus on securing adequate blocks of habitat with minimal disturbance.



The largest decreases in mule deer recruitment have been recorded in the North Dakota badlands where oil & gas well density increased and where, at the same time, coyote density was high. Considering an average of more than 1 fawn : female during 1962-2012, mule deer subpopulations living in areas with more than 3 wells / 10 km² and 2 coyotes / 10 km² were characterized by a fawn:female ratio well below the long-term average (i.e., < 0.8 fawns : female)

We are optimistic that future landscapes of North Dakota will continue to support thriving populations of mule deer and other wildlife. To ensure that this occurs, we must understand how to reduce cumulative effects, apply best management strategies, and pay particular attention to key habitats and how they might be affected by energy developments.

Long Term White-tailed Deer Research Project: An Evaluation of Life History Parameters and Management of White-tailed Deer in North Dakota.

The goal of this research project is to collect information on specific life history parameters and evaluate accuracy of various population indices used for predicting changes in North Dakota's white-tailed deer populations. The information gathered from these studies will provide the missing data that has prevented us from developing and implementing an effective population modeling effort. Additionally, ecological information will be collected on adult female white-tailed deer, as opportunity permits, to facilitate sound science-based management.

Specifically the priority objectives are: (1) Enhance the ability to set harvest rates to coincide with population management goals, (2) Determine annual number of fawns per doe surviving until fall, (3) Determine annual hunter harvest rates for yearling and adult females, (4) Determine winter mortality rates for radio-collared females after winter aerial surveys have been completed, (5) Determine the impact of hunter harvest on radio-collared deer and use this information to extrapolate harvest rates, and (6) Determine sightability of deer, via winter aerial surveys, and compare to other population indices. Secondary objectives include: (1) Determine seasonal movements of females for designing disease testing procedures, and (2) Determine important locations for habitat improvement projects.

The long term strategy of this research project is to conduct a multiphase deer study, using the same methodology in various locations around the state. The focus of the deer project was initially the Coteau region (northeastern Burleigh County). Brain Schaffer completed his thesis in 2013.

The second study shifted to the northern Red River Valley (Walsh County). This location for the deer study area was selected for the following reasons. This region of the state contains marginal winter habitat for deer. Based upon an evaluation of the historical Winter Severity Index for the state (1949 to present), on average the northeastern portion of North Dakota has the most severe winter conditions in the state; thus deer within this area are most likely to experience highly variable stresses and responses to winter weather conditions. Secondly, this portion of the state is closest to the TB infected white-tailed deer in Minnesota. Finally, prior to this study, no deer research had been conducted in this portion of the state. Field work was completed in December 2013. South Dakota State University Graduate student, Kristin Sternhagen, began classes in January of 2014. Data analysis was completed by June of 2014 and a first draft of a thesis will be completed in September 2014. The completion of course work and the defense of a thesis (final report) are anticipated to occur in December of 2014.

In January 2014 the third phase of the project shifted to the Slope region of the state (Grant and Dunn counties). Additionally, we are working cooperatively with South Dakota Game Fish and Parks (SDGFP) with this research project. SDGFP is sponsoring field work in Perkins County, SD. The reason for selecting these three study areas is to evaluate life history parameters in a portion of the state that has received no research attention in the past, collect baseline information on a deer population that is infected with CWD (Grant County), and evaluate the impacts of energy development on white-tailed deer (Dunn County). Data from the three study

areas (Grant, Dunn, and Perkins counties) will be analyzed collectively. The final reports for each phase of the study will constitute a completed thesis.

Between mid-November 2013 and early February 2014 all landowners within the three study areas were either personally contacted or received a flyer providing information about the project. Between 25 February and 2 March a professional helicopter crew was contracted to capture and radio-collar 50 yearling and adult does; 30 of these does were fitted with VITs on each of the three study areas. All 150 deer were captured and radio-collared in six days. Monitoring of the radio-collared deer began immediately after the capture operation by South Dakota State University graduate students Bailey Gullikson and Katherine Moratz, and technician Adam Kauth.

During May and June of 2014 a total of 87 fawns were captured and fitted with expandable radio collars and monitored on a daily basis; two fawns were found stillborn. In addition to monitoring for mortality, bed site analysis was conducted during the first 30 days of each fawn's life. In addition to monitoring for mortality, bed site analysis was conducted during the first 30 days of each fawn's life. During the firearms seasons in 2014 and 2015 hunter access and deer distribution between land ownership types will be monitored. Field work for Bailey Gullikson and Katherine Moratz will be completed December 2015. Their completion of course work and the defense of a thesis (final report) will occur in December of 2016.

Additional Products:

This research is expected to produce a number of peer-reviewed articles on white-tailed deer biology. The first published paper from this work is:

Schaffer, B.A. J.A. Jenks, T.W. Grovenburg, and W.F. Jensen. 2014. Bed-site selection by neonatal white-tailed deer in central North Dakota. *The Prairie Naturalist* 46:34-38.

After completion of the Slope regional deer study we plan to reanalyze all the telemetry and life history data for all white-tailed deer studies that have been conducted in North Dakota and South Dakota, and compile this review into a monograph.

Pilot Study on presence of neonicotinoid insecticides in white-tailed deer.

Recent studies have suggested that immune suppression by neonicotinoid insecticides are the root cause of declining pollinator insects, and may also be affecting a wide range of wildlife taxa. Laboratory tests have shown neonicotinoids to cause birth defects in mice and rats. We are in the process of retrieving archived liver samples from big game that were necropsied at the Wildlife Health Lab in Bismarck. Currently 265 white-tailed deer liver samples are being tested for the three most common neonicotinoids; Clothianidin, Imadacloprid, and Thiamethoxan.

X. Hot Topics

We are in the process of reviewing changes to how deer licenses are allocated.

XI. Relevant Contact Information and Links

Department Contact Information:

North Dakota Game and Fish Department

100 N. Bismarck Expressway, Bismarck, ND 58501-5095

Phone: 701-328-6300

E-mail: ndgf@nd.gov

Website: <http://gf.nd.gov/>

Midwest Deer and Turkey Study Group

Website: <http://mdwtsg.org/>

2014 Ohio Deer Program Report

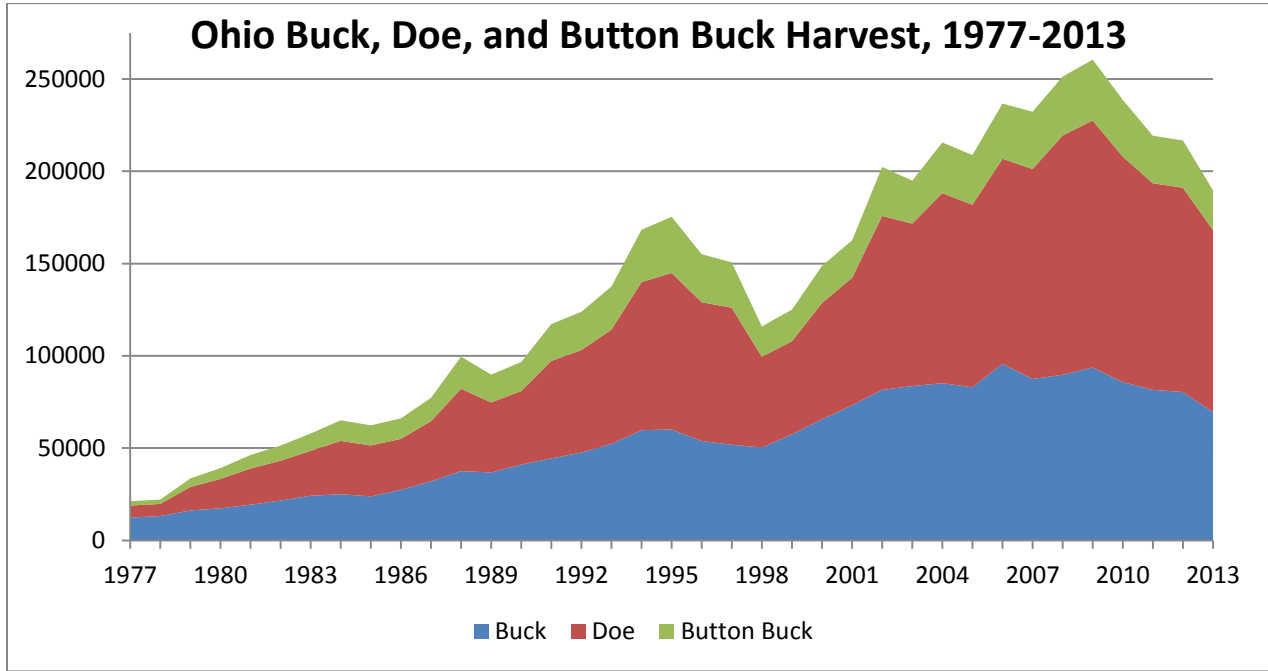
I. Current Harvest

The 2013-14 total deer harvest was 191,503; down 12.5% from the 218,910 reported in 2012-13. Though some of the decrease was due to fewer deer, adverse weather during our mid-November youth and early January muzzleloader seasons, likely had an impact on hunter participation and/or deer movement. Archery harvest, however, was up 1.1%, and archers accounted for a record 45% of the 2013-14 season total.

	Bucks*		Does		Buttens		Total		Change (%)
	2013	2012	2013	2012	2013	2012	2013	2012	
Gun	26,349	31,221	39,838	44,937	9,221	10,805	75,408	86,963	-13.3
Archery									
Crossbow	20,957	19,934	22,935	21,826	5,149	5,258	49,041	47,018	4.3
Vertical Bow	14,723	14,840	18,357	19,015	3,440	3,770	36,520	37,625	-2.9
Archery Total	35,680	34,774	41,292	40,841	8,589	9,028	85,561	84,643	1.1
Muzzleloader									
Early Antlerless	69		4,655		884		5,608		
Late Either-sex	4,352	5,411	10,141	13,379	1,971	2,765	16,464	21,555	-23.6
Total	4,421	5,537	14,796	13,540	2,855	2,792	22,072	21,869	1.8
Youth	3,043	4,671	2,671	3,306	926	1,201	6,640	9,178	-27.7
Total	70,100*	81,149	99,587	111,820	21,816	25,941	191,503	218,910	-12.5

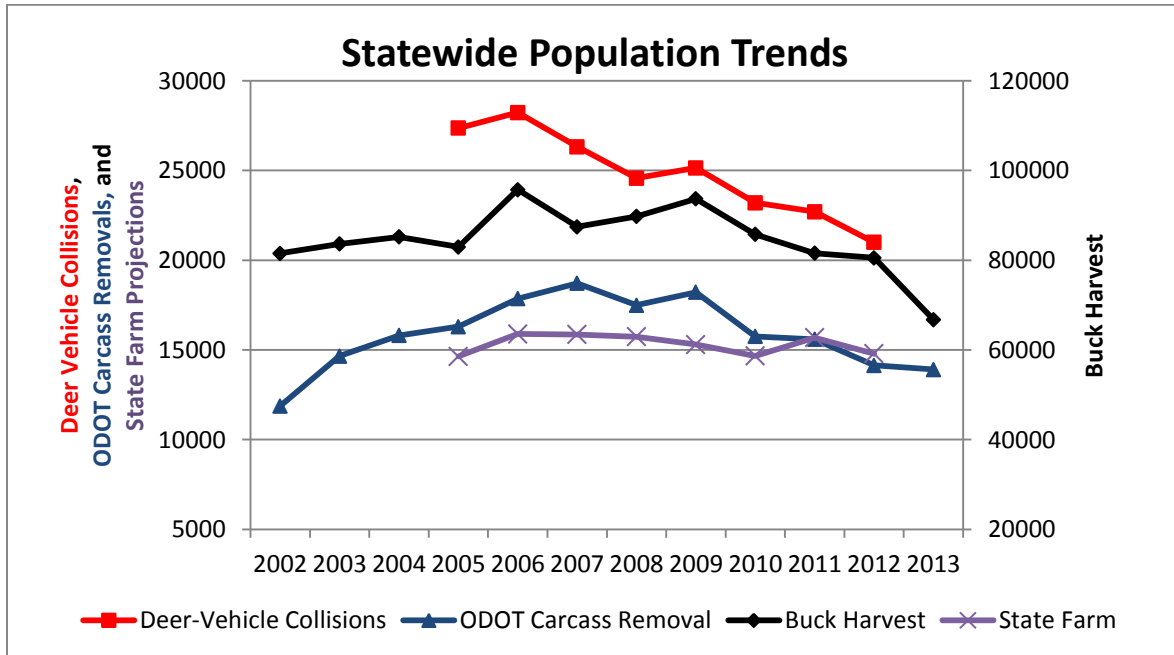
*Includes "antlerless bucks" - 1,884 with antlers less than three inches in length and 933 shed bucks.

II. Historical Harvest



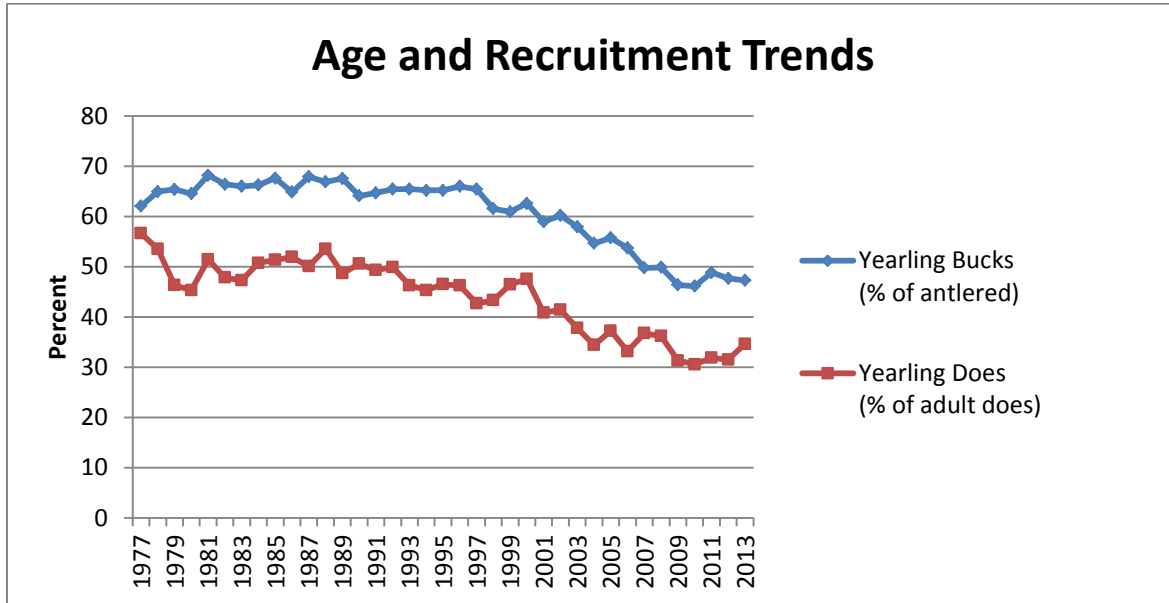
III. Population Estimate/Trends

Population – Trend data suggest that our statewide population peaked in the mid- to late 2000s. With the introduction of the reduced-cost antlerless permit in 2007, significant progress has been made in reducing deer populations across much of the state. We are shifting focus in many areas from population reduction to stabilization.



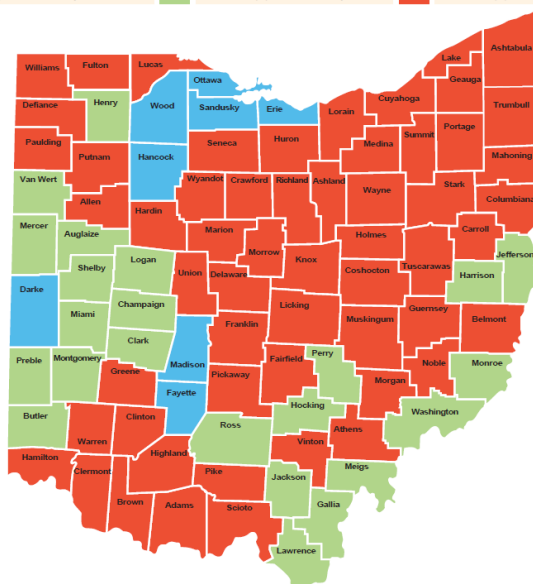
III. Population Estimate/Trends (cont'd)

Demographics – The age structure of antlered bucks has increased steadily since the late '90s as evidenced by the corresponding decrease in percent yearling bucks in the aged harvest sample. The percent yearlings among adult does has also declined steadily since the late '80s, corroborating data from reproductive studies that show a decline in herd productivity.



IV. Deer Management Zones: Each of Ohio's 88 counties serves as a separate deer management unit.

- 2** One (1) either-sex permit and one (1) antlerless permit
- 3** Two (2) either-sex permits and one (1) antlerless permit
- 4** Three (3) either-sex permits and one (1) antlerless permit



2013-14 Harvest Regulation Summary

V. Regulation/legislation

2013-2014 Season

1. Legal shooting hours were extended to one-half hour past sunset for all firearms seasons.
2. A 2-day, mid-December, either-sex gun season was removed.
3. A 2-day antlerless-only muzzleloader season was added to the 2nd weekend of October. Archers were limited to antlerless deer as well.

2014-2015 Season

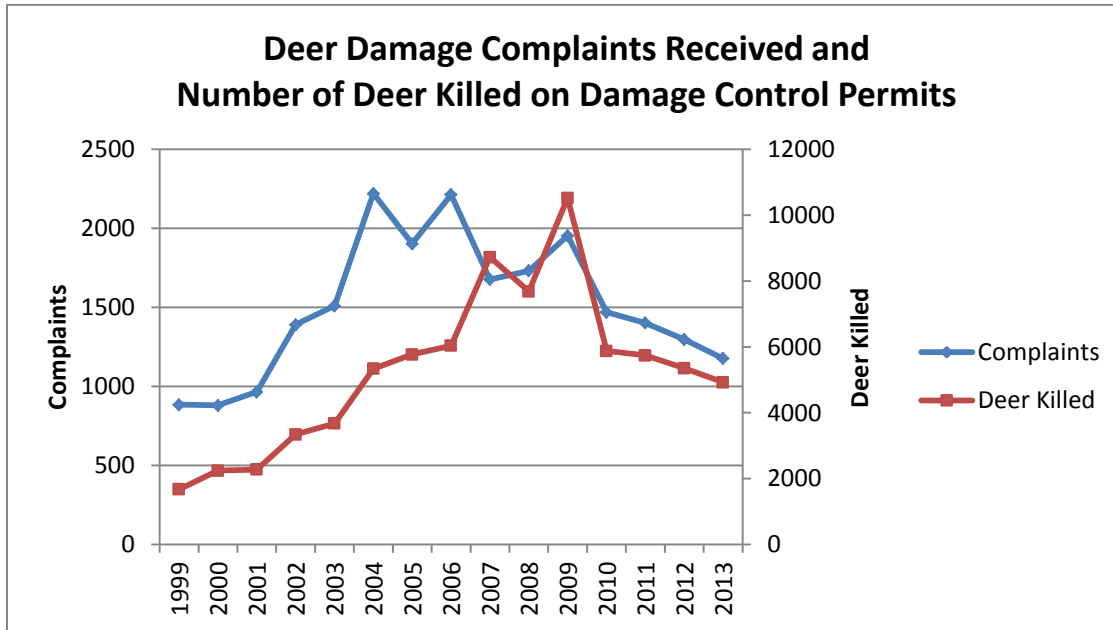
1. A limited selection of straight-walled cartridge rifles will be legal for use during the 2-day youth and 7-day firearm seasons. Because of the difficulty in plugging some of these rifles, the “plug rule” has been eliminated. However, hunters are still restricted to loading no more than three rounds in any firearm. See “2014-15 Regulations” under Relevant Links for a list of legal calibers.
2. Further reductions in bag limits and antlerless harvest opportunities imposed to stabilize populations.
3. Non-resident license fee increase failed.

VI. Urban/Special Hunts

Numerous managed deer hunting programs continue in Ohio’s urban/suburban areas. Thanks to the success of their urban deer management programs, specifically in their metro parks, Hamilton County (Cincinnati) and Lucas County (Toledo) rank 3rd and 5th (out of 88), respectively, in public land deer harvest as a percentage of the county’s total.

VII. Deer Management Assistance/Crop Damage

Landowners may be issued Deer Damage Control Permits (DDCP) at the time damage is occurring to kill deer during the dates and under the conditions specified on the permit. For most agricultural problems, these permits will be valid from January 1 until the start of the archery season. Under limited circumstances, permits may be extended until the start of the youth gun season (mid-November). Permits may be valid year-round to control damage at orchards, nurseries, inside municipalities, and airports. DDCPs expire at the end of the year. Except in the case of rub damage, permit holders are strongly encouraged to kill antlerless deer. Permit holders must surrender all antlers to the Division of Wildlife. In 2013, a total of 1,177 crop damage complaints was received by the Division of Wildlife, 9.3% fewer than the previous year. This is the fourth year in a row that both the number of complaints received and the number of deer killed on damage permits have declined. Out of the 1,177 complaints received, the Division of Wildlife issued permits in 1,135 cases. In 2013, these resulted in 4,923 deer killed, 431 fewer than the 2012 season.



VIII. Diseases

The Ohio Department of Agriculture (ODA) and the U.S. Department of Agriculture (USDA) are integral partners in all disease surveillance plans, and, to date, there have been no positive cases of CWD in Ohio. ODNR has worked with these partners on targeted surveillance of suspect deer as well as active monitoring via hunter-harvested and road-killed deer since 2002. This year Division of Wildlife personnel collected 783 road-killed deer for CWD testing, along with an additional 88 hunter harvested bucks, and nine deer displaying symptoms consistent with CWD. We failed to detect CWD in all samples. To date, over 11,000 free-ranging Ohio deer have been tested for CWD. Though hemorrhagic disease was not confirmed in free-ranging deer in 2013, several deer from captive herds in Highland, Clermont, Clinton, and Butler counties tested positive for the disease.

IX. Research

New Deer Management Units (DMUs)

An Ohio State University post-doc, Gabe Karns, has been modeling antlerless harvest density across the state as a first step towards creating Deer Management Units. Using 59 of our 88 counties to inform the model, female harvest density was best explained using the three variables, % of land in farms, percent of non-cropland (residual habitat) within farms, and per capita deer permit sales. These three variables explained 76% of the variation in female harvest density. Utilizing data from the other 29 counties as validation, the model-predicted values and the actual reported harvest densities were highly correlated ($r = 0.83$, $P < 0.001$). This model has allowed us to combine counties into six broad management regions.

The final step of the process is currently underway. Because we needed sub-county resolution of harvest locations, we have broken the state up into ~1000 "route polygons" (using interstates, U.S. highways, state routes, and major rivers) and conducted an online harvest survey that utilized a Google

mapping interface, giving hunters the opportunity to identify places where they have hunted/harvested antlerless deer over the past three years. The survey results should allow us to allocate harvests proportionally into each of the “route polygons,” create and re-run the harvest density model in each of the six regions, and combine like-polygons to form new DMUs.

The end goal of this research is to create data-driven, biologically relevant, Deer Management Units. Not only will this dissolve uninformative political boundaries (county lines that currently serve as management unit divisions), but will, more importantly, reduce the number of management units. By grouping counties or portions of counties into DMUs with similar deer population, hunter access, and habitat characteristics, collecting adequate sample sizes for herd health and hunter effort surveys will be much more efficient (see “Rationale for Deer Management Units” in Relevant Links).

Productivity Study

Over a 3-year period, 2010-12, 1,153 reproductive tracts were examined to determine pregnancy, reproductive, and fetal rates. These rates were compared to previous reproductive studies in 1982-83 and 1997-99 to gauge herd condition changes over time. All pertinent comparisons (reproductive rate, fawn pregnancy rate, yearling litter size, etc.) yielded lower measures of reproductive output in the 2010-12 study than in the two prior studies. In the hill country region, percent of fawns breeding declined from 51% in 1982-83 to 32% in 1997-99. We observed our lowest fawn pregnancy rates to date in the 2010-12 study, where only 16% of fawns were pregnant. A preliminary report has been prepared (see “Deer Program Updates” in Relevant Links), though a formal dissemination of the study results are pending cooperation from neighboring Midwestern states that have been invited to participate in a meta-analysis.

Deer Hunter Surveys

We have conducted deer hunter surveys annually since 2011 to quantify hunter effort, participation and success rates, and to survey hunter opinions on various hot-button topics such as baiting, leasing, and restrictions on public land access.

X. Hot Topics

Baiting

The 2013-14 deer hunter survey assessed use and opinions of baiting to attract and harvest deer. Just over half of respondents used bait, and 75% felt its use as a hunting method should be legal. Most troubling was the response to the use of bait as a means of accelerating the rate of disease spread – only 19% of respondents agreed (39% disagreed) that concentrating deer with bait potentially increases the rate of disease spread throughout the population. This doesn’t bode well for disease management options, if/when baiting restrictions are needed.

X. Hot Topics (cont'd)

Goal Setting

Population reduction measures have been largely successful, but have caused concern among some of the hunting public. Many opposed to these reductions point to the dated population goals, which are based on farmer attitude surveys, the last one being in 2000. With the transition from counties to DMUs planned for 2016, new population goals are needed, as is a broader, more comprehensive goal-setting process. Therefore, during the summer of 2015, we plan to conduct our traditional farmer attitude survey, along with a deer hunter and a general citizenry/rural landowner survey. If the net result of the competing opinions of farmers and hunters towards deer are similar to the results of the general citizenry/rural landowner survey, we will have strong evidence rely solely on one survey in the future.

XI. Relevant Links

2014-15 Regulations – List of straight-walled cartridge rifles under “Allowable Hunting Equipment”
<http://wildlife.ohiodnr.gov/hunting-trapping-and-shooting-sports/hunting-trapping-regulations/deer-hunting-regulations>

Rationale for Deer Management Units

<http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/hunting/new-dmu.pdf>

2013-14 Season Summary

Link currently unavailable – will update on final draft

Deer Program Updates

Link currently unavailable – will update on final draft



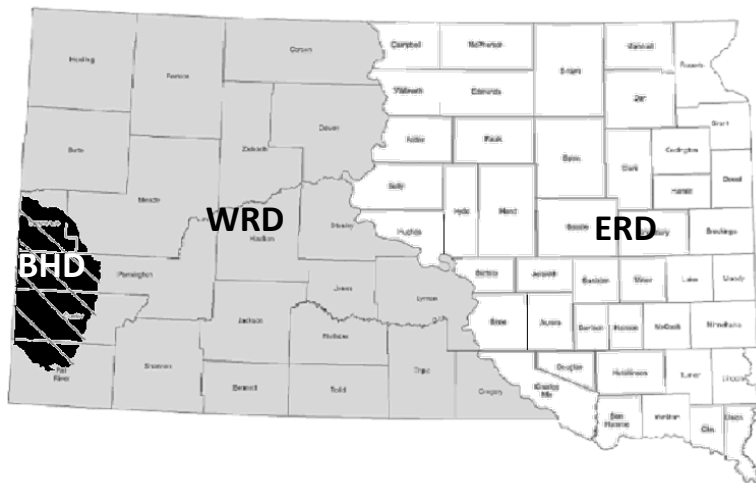
SOUTH DAKOTA 2014 DEER REPORT

MIDWEST DEER AND WILD TURKEY STUDY GROUP *Potosi, MO*

OVERVIEW

East River Deer Management Area (ERD)

Over the past few years deer populations have decreased throughout much of the east river deer management area. White-tailed deer population densities are below management objectives in 89%



of the deer management units in this area; mule deer densities are below objective in all units. In the western and central portions of this management area populations appear to be more stable and closer to objective. White-tailed deer are the predominant deer species east of the river, with 98% of last year's firearm season harvest in this management area being whitetails. The winters of 2009-13 were severe in eastern South Dakota, especially along the northern portions, presumably causing substantial over-winter mortality and reduced recruitment

rates. The 2013/14 winter was near normal in most units east of the Missouri River. Overall, recruitment estimates have trended downward in this region, and the 2013 east river pre-season fall recruitment rates of 93 fawns:100 does were down from 103 fawns:100 does experienced in 2012. Hunter harvest rates in 2013 throughout most of the area were down considerably from the record harvest in 2010. As a result, firearm antlerless tags for the 2014 season were again reduced (9% reduction in buck licenses and 59% reduction in antlerless licenses) and further restrictions on antlerless harvest were established in many units for youth, muzzleloader, and archery deer seasons.

2014 ERD Outlook

The near normal winter conditions of 2013/14 will most likely assist with rebuilding deer herds of both white-tailed and mule deer populations east of the river. With abundant forage resources throughout most of the east river deer units provided by agricultural row crops, deer should be in good body condition in most areas and we expect recruitment rates to be good. Grassland (including wetlands/shelterbelts) conversion to agriculture has been occurring at rates not seen since the Great Depression, and this loss of habitat will likely have both biological and social impacts to deer management in several units. Reports of Epizootic Hemorrhagic Disease (EHD) occurred at record

levels in 2012, with the southeast part of the state experience record losses, but losses were substantially less in 2013. With the reduction of antlerless tags going into the 2014 seasons, we expect deer populations to rebound and provide ample hunting opportunities in the near future. In this area, mature bucks are consistently harvested along the Missouri, James and Big Sioux Rivers and also in the northeast part of the management area where wetland densities are very high. The seek-and-chase period during the rut typically occurs early November, with peak breeding likely occurring mid-November.

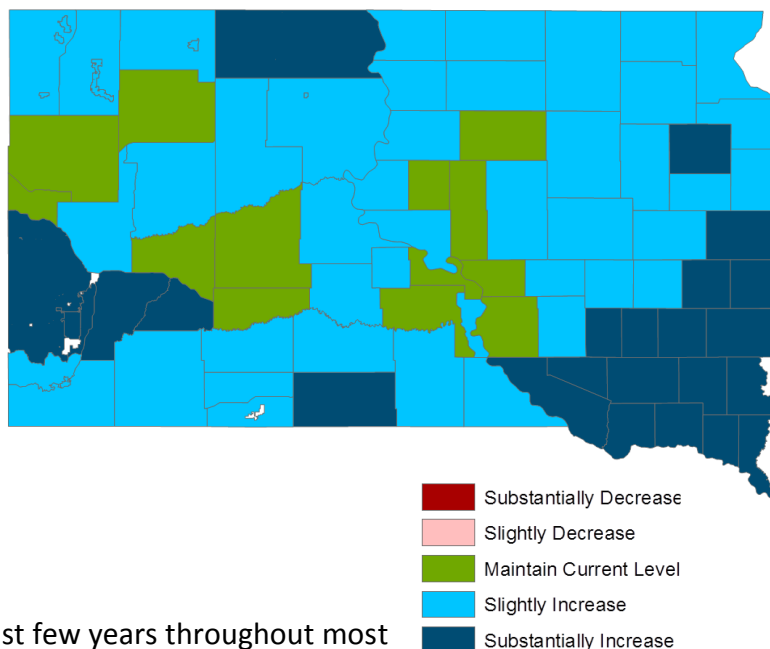
West River Deer Management Area (WRD)

Deer populations have decreased over the past few years throughout most of the west river deer management area. Both deer species are abundant in this area, but white-tailed deer harvest was 73% of last year’s firearm season harvest. Approximately 85% of deer management units in this area have objectives to increase white-tailed deer populations, and 100% of unit objectives for mule deer are to increase populations. Mule deer populations have declined in most units across the west river deer management area. The winters of 2008 - 11 have had negative impacts on mule deer populations and conservative harvest strategies have been implemented the last few years. Mule deer fall recruitment rates in 2013 were 61 fawns:100 does, slightly lower than recruitment observed in 2012 and trending down since 2008. White-tailed deer populations in this area appear to be stable in some units but decreasing in others. The far northwestern portion of the state likely experienced above average winter loss in 2010/11 and antlerless harvest has been reduced accordingly. White-tailed deer recruitment rates in 2013 were 59 fawns: 100 does, down substantially from 2011 and trending down since 2008. Less deer licenses will be available in 2014; buck licenses were reduced by 9% and antlerless licenses by 86%.

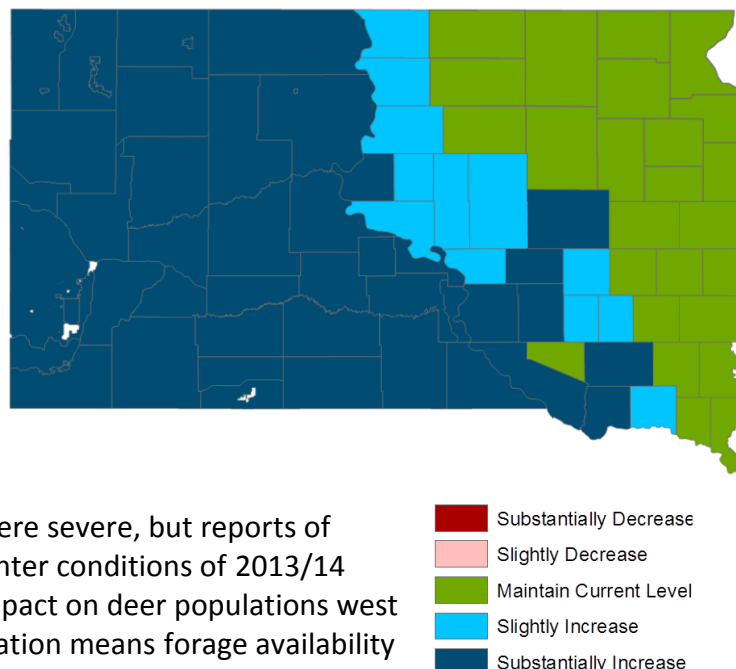
2013 WRD Outlook

In October of 2013, the Black Hills and many prairie units of western South Dakota experienced a blizzard with ≥ 4 foot snowfall accumulation in many areas. Livestock losses were severe, but reports of wildlife mortalities were few. The remaining winter conditions of 2013/14 were near normal and should have a positive impact on deer populations west of the river. Timely spring and summer precipitation means forage availability and/or quality will be more abundant than last year in most areas which

2013 White-tailed Deer Management Objectives



2013 Mule Deer Management Objectives



should have a positive impact on deer nutrition. Reports of EHD occurred at record levels in 2012, but losses in 2013 were substantially less. With the reduction of antlerless tags going into the 2014 seasons, we expect deer populations to rebound and provide ample hunting opportunities in many management units in the near future. Some areas may require further reductions in antlerless tags to reach mule deer management objectives in an acceptable time frame. In this area, mature whitetail bucks are consistently harvested along the Missouri, Bad, Cheyenne, Moreau, and Belle Fourche Rivers. Higher concentrations of mule deer can be found in Haakon, Mellette, Perkins, Butte and Pennington Counties. The seek-and-chase period during the rut typically occurs early November, with peak breeding likely occurring mid-November.

Black Hills Management Area (BHD)

The Black Hills deer population continues to remain at densities lower than the mid-2000s. White-tailed deer are the predominant species, with 97% of last year's firearm harvest in the Black Hills being whitetails. Mule deer populations appear to be stable but remain at low densities, whereas whitetail populations are at higher densities but have declined in recent years. Both white-tailed deer and mule deer are substantially below management objectives. Recruitment of white-tailed deer remains lower than the prairie units, with 72 fawns per 100 does counted in 2013. Several mortality factors have contributed to the lower deer densities and these potentially include hunter harvest, predation, disease, severe winters, and vehicle collisions. Conservative antlerless harvest will continue throughout the hills region. Antlerless firearm deer licenses were removed in the Black Hills Deer Management area in 2013. Youth, muzzleloader, and archery deer statewide deer seasons are now restricted to one license in this management area, and no muzzleloader or archery antlerless tags are authorized in the Black Hills.

2013 BHD Outlook

In October of 2013, the northern Black Hills experienced a blizzard with ≥ 4 foot snowfall amounts in many areas. Livestock losses were severe, but reports of wildlife mortalities were few. The remaining winter conditions of 2013/14 were near normal and should have a positive impact on deer populations in the Black Hills. Spring and summer precipitation in 2014 has been plenty and timely, which has had a visible positive impact on forage availability. With the reductions in firearms antlerless tags the past few years, further restrictions on antlerless harvest from the statewide deer seasons (youth, muzzleloader, archery), and increased mountain lion harvest, we expect deer populations to rebound in the near future. In this area mature whitetail bucks typically are harvested in mixed forest habitats. The seek-and-chase period during the rut typically occurs early to mid-November, with peak breeding likely occurring mid- to late- November.

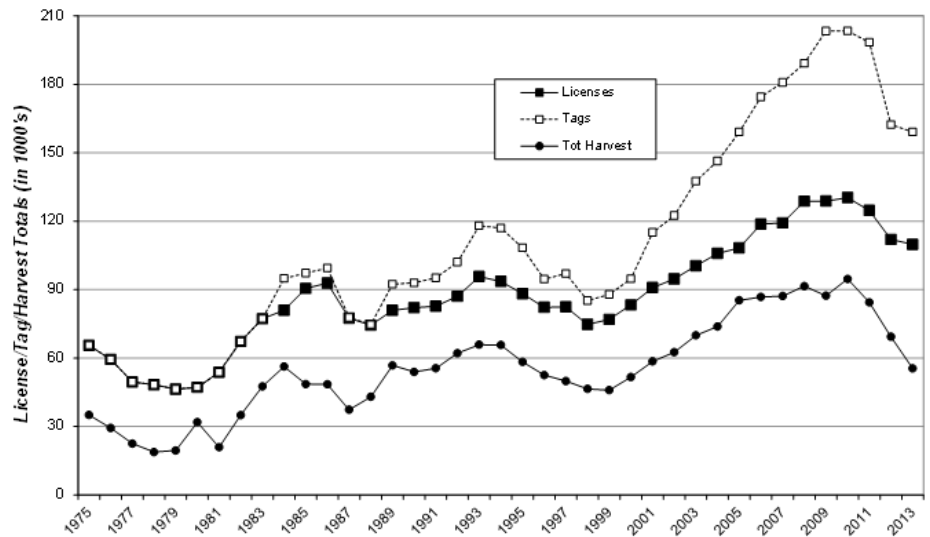
DEER HARVEST

Statewide

There were 60,082 resident deer licenses (plus unlimited licenses) available in 2013 and 100,885 were issued. Nonresidents had 2,560 licenses (plus unlimited licenses) available and 8,972 were issued. Statewide, there were a total of 109,857 licenses sold that represented a total of 159,117 tags, a decrease in 2,151 licenses and 3,221 tags from 2012. This was the fifth year that triple-tag licenses were issued for both East and West River seasons.

South Dakota Combined Deer Licensing 1975-2013

Random samplings were taken for each unit within each season unless the numbers of hunters were low enough that all were sampled to satisfy the statistical analyses. In most cases, the response rates in the majority of units within seasons did not meet the 85% goals.



The projected statewide deer harvest was 55,483, a 20% decrease from 2012. This projection included 25,199

whitetail bucks, 23,275 whitetail does, 4,251 mule bucks and 2,758 mule does. A decrease in overall harvest of nearly 14,000 deer with relatively no change in the number of tags issued resulted in an 8% decrease in harvest success from 2012.

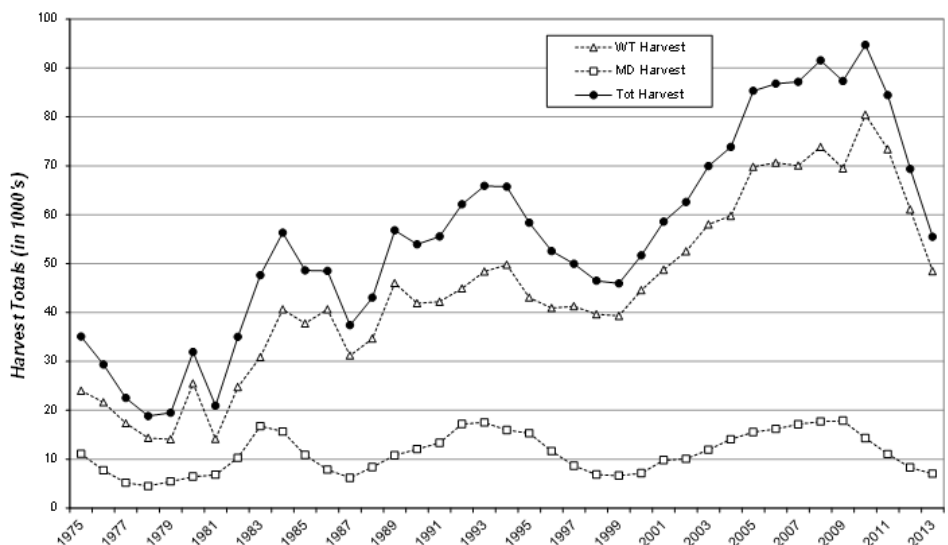
Reductions in harvest for East River Deer and West River Deer accounted for most of the decrease from 2012. Both whitetail buck and doe harvest estimates decreased from 2012 by 4,087 and 8,507 respectively. Mule buck and doe harvest decreased from 2012 by 426 and 849 respectively. Mule deer made up approximately 12% of the total harvest.

The 2013 overall statewide harvest success decreased significantly to 35% from 43% in 2012. Harvest success ranged from 22% for Lacreek Refuge Deer to 80% for Custer State Park.

Respondents reported hunting an average of 4.97 days per hunter, which projects to a statewide total of 545,749 recreation days in 2013. The average number of days hunted decreased from 2012. That combined with a slight decrease in license sales resulted in a decrease of approximately 32,000 total days of recreation from 2012.

Average hunter satisfaction values (1=very dissatisfied to 7=very satisfied) varied between seasons and ranged from 3.04 at Lacreek Refuge to 5.57 for Mentored Youth.

South Dakota's Combined Deer Harvest 1975-2013

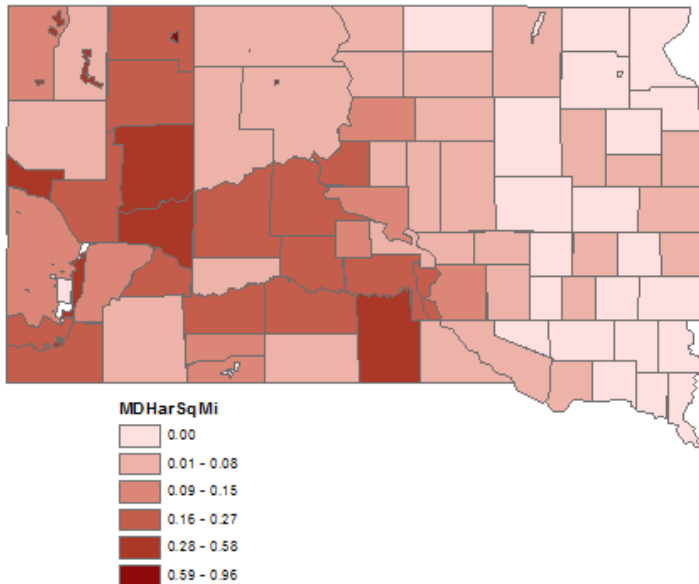


2013 Statewide Deer Harvest Projection Summary

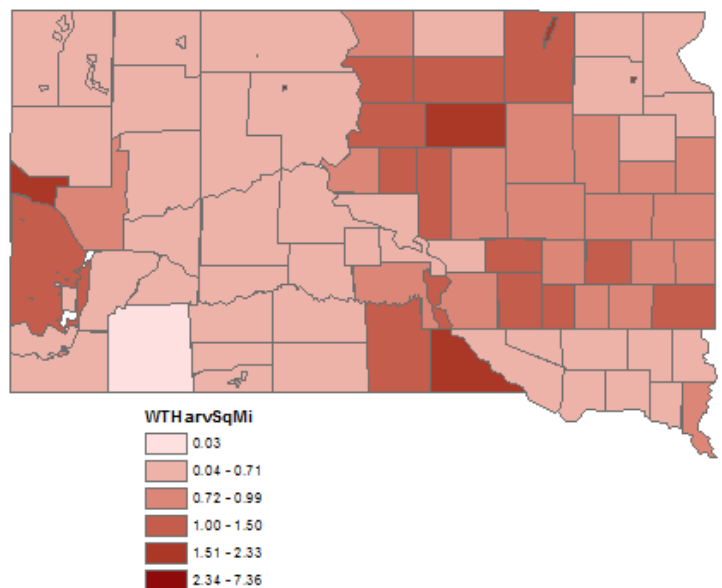
last revised: 8 May 2014

SOUTH DAKOTA Harvest Statistic	Season	Archery	Youth Antlerless	Mentored Youth	Muzzleloader	Landowner Own Land Antlerless	West River	West River Landowner Own Land	West River Special Buck Unit	East River	East River Landowner Own Land	East River Special Buck Unit	Refuges			Black Hills	Custer State Park	Grand Totals
													Sand Lake NWR	Lacreek NWR	Waubay NWR			
Licenses/Tags																		
Resident Licenses																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	22,085	Unlimited	500	33,265	Unlimited	687	120	50	45	3,300	30	60,082
Sold		24,315	4,759	2,939	4,350	1,390	20,119	1,805	498	31,624	4,827	686	121	46	46	3,330	30	100,885
Resident Tags																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	45,050	Unlimited	500	50,935	Unlimited	687	120	70	45	3,300	30	100,737
Sold		26,189	4,759	2,939	6,271	1,390	40,665	2,955	498	47,605	7,739	686	121	65	46	3,330	30	145,288
Nonresident Licenses																		
Available		Unlimited	Unlimited	N/A	Unlimited	N/A	1,772	N/A	500	Leftovers	N/A	N/A	12	6	6	264	N/A	2,560
Sold		3,036	789	N/A	286	N/A	2,719	N/A	497	1,366	N/A	N/A	11	2	5	261	N/A	8,972
Nonresident Tags																		
Available		Unlimited	Unlimited	N/A	Unlimited	N/A	3,612	N/A	500	Leftovers	N/A	N/A	12	8	6	264	N/A	4,402
Sold		3,357	789	N/A	432	N/A	5,760	N/A	497	2,715	N/A	N/A	11	2	5	261	N/A	13,829
Total Licenses																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	23,857	Unlimited	1,000	33,265	Unlimited	687	132	56	51	3,564	30	62,642
Sold		27,351	5,548	2,939	4,636	1,390	22,838	1,805	995	32,990	4,827	686	132	48	51	3,591	30	109,857
Total Tags																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	48,662	Unlimited	1,000	50,935	Unlimited	687	132	78	51	3,564	30	105,139
Sold		29,546	5,548	2,939	6,703	1,390	46,425	2,955	995	50,320	7,739	686	132	67	51	3,591	30	159,117
Hunters																		
Available		19,843	4,452	2,939	4,324	1,181	21,770	1,805	995	31,972	4,827	686	132	48	51	3,591	30	98,646
Recreation																		
Average Days Hunted		11.11	4.64	3.87	4.14	3.44	3.52	4.07	3.57	4.29	4.33	5.39	2.48	1.97	1.71	4.68	3.33	4.97
Total Days Hunted		220,551	20,668	11,374	17,896	4,057	76,637	7,350	3,553	141,677	20,885	3,695	327	95	87	16,797	100	545,749
Mean Satisfaction Score		4.76	5.23	5.57	4.57	4.74	4.46	4.87	5.44	4.19	4.61	4.74	5.06	3.04	4.44	5.27	N/A	100
Harvest																		
White-tailed Deer																		
Bucks		3,874	346	179	311	29	6,894	537	317	8,831	1,594	308	34	10	15	1,912	7	25,199
Does		2,586	1,756	1,028	820	369	5,619	164	2	9,851	732	8	3	1	0	319	17	23,275
Total		6,460	2,102	1,207	1,132	398	12,514	701	319	18,681	2,327	317	37	11	15	2,231	24	48,474
Mule Deer																		
Bucks		424	32	14	62	3	2,702	283	373	198	54	26	14	3	1	62	0	4,251
Does		141	344	154	146	32	1,606	67	5	242	14	0	4	1	0	2	0	2,758
Total		565	375	168	208	36	4,308	350	377	440	67	26	17	4	1	64	0	7,009
Total Deer Harvest																		
Bucks		4,298	377	193	374	32	9,596	821	689	9,029	1,648	335	48	13	16	1,974	7	29,450
Does		2,727	2,100	1,182	966	401	7,225	230	7	10,093	746	8	6	2	0	321	17	26,033
Total		7,025	2,477	1,375	1,340	434	16,822	1,051	697	19,122	2,394	343	54	15	16	2,295	24	55,483
Success																		
		24%	45%	47%	20%	31%	36%	36%	70%	38%	31%	50%	41%	22%	31%	64%	80%	35%

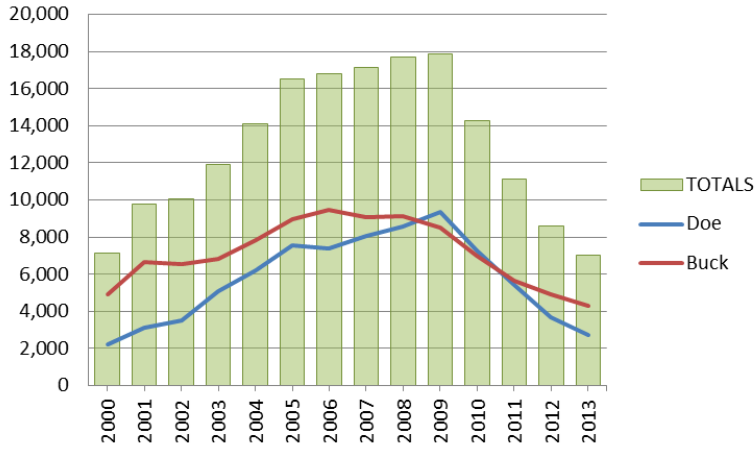
2013 Mule Deer Harvest Densities



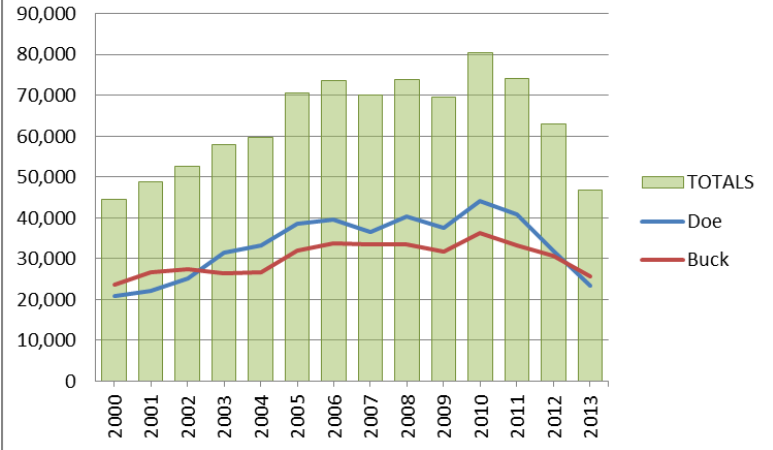
2013 White-tailed Deer Harvest Densities



Mule Deer Harvest



Whitetail Harvest



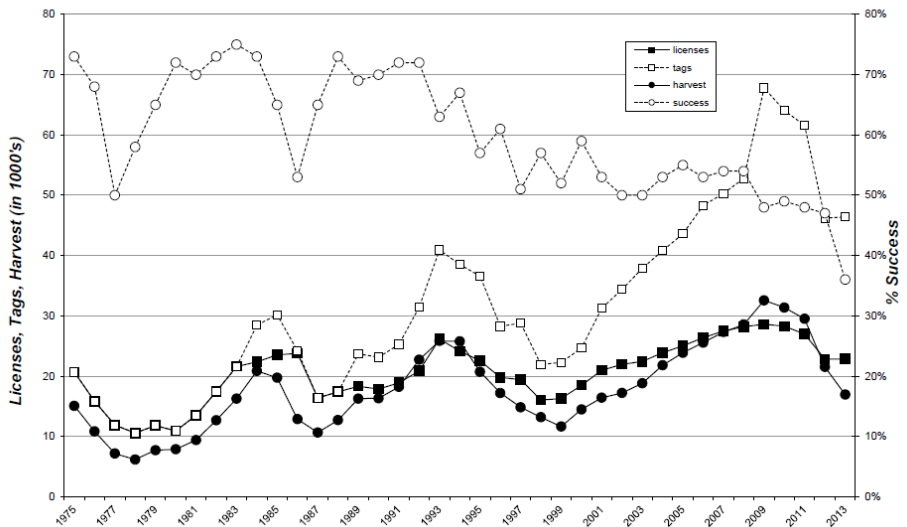
West River Firearm Deer

There were 25,638 licenses issued for the 2013 West River Firearm Deer season (22,838 regular, 995 Special Buck and 1,805 Landowner Own Land Only) for a total of 50,375 tags.

The West River season was open 16 days from November 16 – December 1 in most units and from November 2-24 in Corson, Dewey and Ziebach counties. Units 50A in Mellette County and 30A in Gregory County were open from Nov. 2-5 and 18-24, while units 50B and 30B were open from November 16 – December 1. The season was also open from December 28, 2013 - January 5, 2014 for all unfilled antlerless deer tags.

A random sample of 9,432 hunters was taken from the regular West River season, 997 from the Landowner Own Land Only licenses, and 995 from the Special Buck licenses. All hunters that listed an email address were surveyed using Qualtrics for the first attempt. Approximately 47% of regular season, 40% of Landowner Own Land, and 76% of Special Buck hunters surveyed through Qualtrics responded. All hunters who did not respond or did not supply an email address were mailed paper surveys which could be responded to either online or through the mail. Final response rates were 82% for regular West River Deer, 72% for Landowner Own Land and 81% for Special Buck. Of all responding hunters, 68% of regular West River, 48% of Landowner Own Land and 78% of Special Buck hunters responded over the Internet.

West River Deer Regular Season 1975-2013 (does not include Special Buck or Landowner Own Land)



Respondents reported hunting an average of 3.52 days in the regular West River season, 4.07 days for landowner and 3.57 days in the Special Buck. These averages projected to a total of 87,540 recreation days for all West River deer seasons. Hunters reported harvesting approximately 92% of their deer during the regular season and 8% during December 28 - January 5.

The West River projected deer harvest was 16,822 for the regular season, 1,051 for landowner on own land, and 697 for the Special Buck licenses. Success rates were 36% for the regular season, 36% for landowner and 70% for Special Buck.

Success for the regular West River season “any deer and any antlerless deer” and “any whitetail and antlerless whitetail” license 1st tags (any) was 50% and for 2nd (antlerless only) tags was 29%. Success for “any antlerless deer and any antlerless deer” and “antlerless whitetail and antlerless whitetail” license 1st tags was 44% and for 2nd tags was 21%. Success for the “any deer and any two antlerless deer” and “any whitetail and two antlerless whitetail” license 1st tags (any) was 43%, for 2nd (antlerless only) tags was 26%, and for 3rd (antlerless only) tags was 8%. Success for “three any antlerless deer” and “three antlerless whitetail” license 1st tags was 36%, for 2nd tags was 17%, and for 3rd tags was 5%.

The mean satisfaction score for those responding to the regular West River season was 4.46 (1 being very dissatisfied and 7 very satisfied).

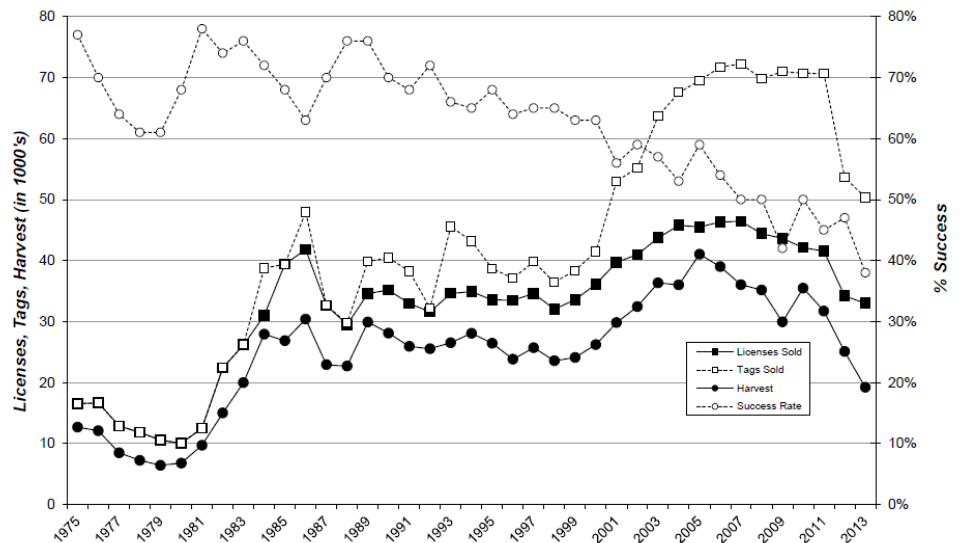
East River Firearm Deer

There were 38,503 licenses issued for the 2013 East River Firearm Deer season (32,990 regular, 686 Special Buck and 4,827 Landowner Own Land Only) for a total of 58,745 tags.

The East River season was open 16 days from November 23 through December 8 in all units. The season was also open from December 28, 2013 - January 5, 2014 for all unfilled antlerless deer tags.

East River Deer Regular Season 1975-2013

(does not include Special Buck or Landowner Own Land)



A random sample of 13,896

hunters was taken from the regular East River season, 1,998 from the Landowner Own Land Only licenses, and all 686 Special Buck hunters. All hunters that listed an email address were surveyed using Qualtrics for the first attempt. Approximately 53% of regular season, 42% of Landowner Own Land, and 68% of Special Buck hunters surveyed through Qualtrics responded. All hunters who did not respond or did not supply an email address were mailed paper surveys which could be responded to either online or through the mail. Final response rates were 81% for regular East River Deer, 73% for Landowner Own Land and 83% for Special Buck. Of all responding hunters, 65% of

regular East River, 50% of Landowner Own Land and 80% of Special Buck hunters responded over the Internet.

Respondents reported hunting an average of 4.18 days per hunter for the regular season, 4.61 days for Landowner Own Land and 4.74 days for Special Buck, resulting in a projected total of 166,257 recreation days for the entire East River season. Hunters reported harvesting approximately 89% of their deer during the regular season and 11% from December 28, 2013 - January 5, 2014.

The East River projected deer harvest was 19,122 for the regular season, 2,394 for Landowner Own Land, and 343 for the Special Buck season. Success rates were 38% for the regular season, 31% for Landowner Own Land, and 50% for Special Buck. Success for the regular East River season “any deer and any antlerless deer” and “any whitetail and antlerless whitetail” license 1st tags (any) was 44% and success for 2nd (antlerless only) tags was 33%. Success for “any antlerless deer and any antlerless deer” and “antlerless whitetail and antlerless whitetail” license 1st tags was 49% and success for 2nd tags was 22%. Success for the regular East River season “any deer and 2 any antlerless deer” and “any whitetail and 2 antlerless whitetail” license 1st tags (any) was 54%, success for 2nd (antlerless only) tags was 42% and success for 3rd (antlerless only) tags was 15%. Success for the regular East River season “3 any antlerless deer” and “3 antlerless whitetail” license 1st tags was 60%, success for 2nd tags was 43% and success for 3rd tags was 21%.

The mean satisfaction score for those responding to the regular East River survey was 4.19, for the Landowner Own Land survey was 4.61, and for the Special Buck survey was 5.39 (1 = “very dissatisfied” and 7 = “very satisfied”).

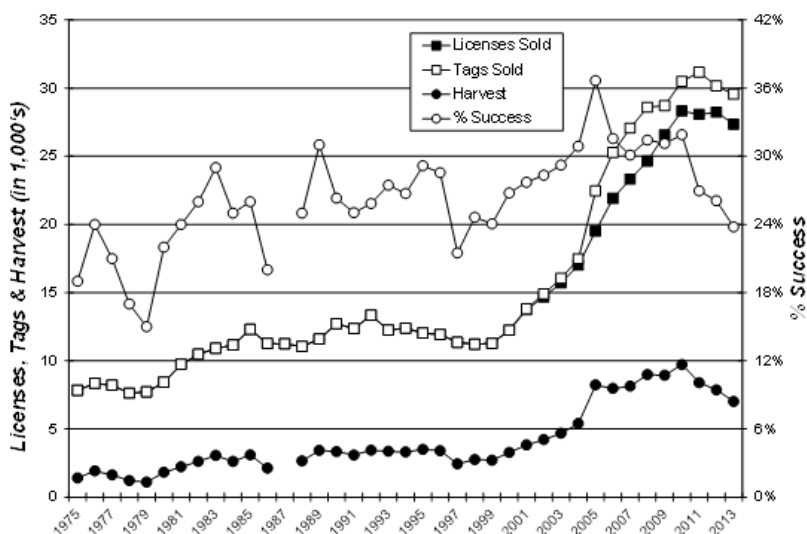
Archery Deer

There were 27,351 archery deer licenses issued in 2013 (24,315 resident, 3,036 nonresident) for a total of 29,546 tags. All were single any-deer tags, single antlerless-deer tags, or double-antlerless deer tags for the Statewide, LM1 (Limited Statewide), East River or West River units.

A random sample of 5,967 hunters (30%) were surveyed and 4,635 responded for a 78% return rate. Approximately 68% of responding hunters used the Internet to respond.

The 2013 Archery Deer season ran from September 28, 2013 through January 15, 2014, however only unfilled antlerless tags were valid from January 1-15. Respondents reported hunting 11.11 days per hunter, which projects to a total of 220,551 recreation days for the season.

Archery Deer 1975-2013

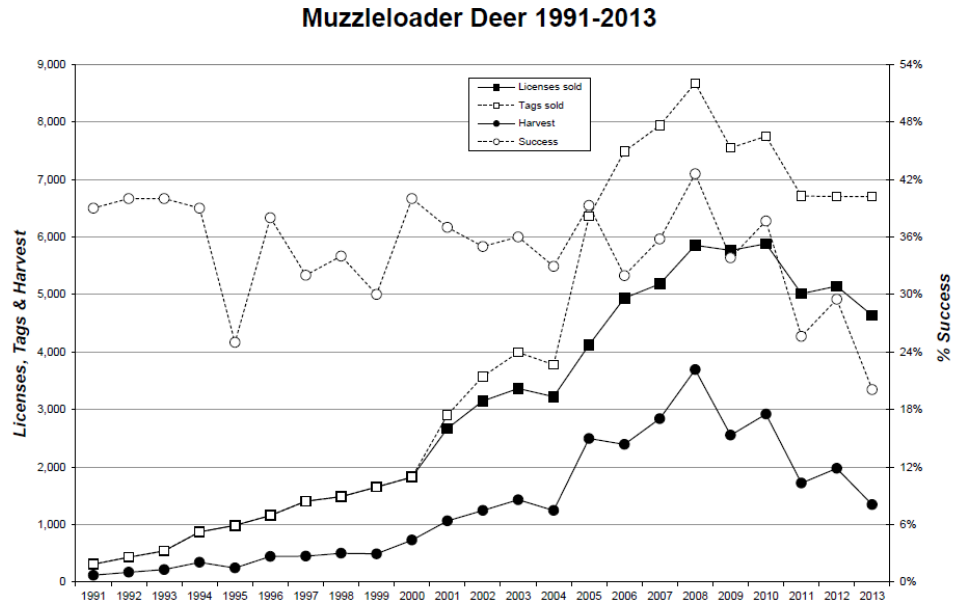


The projected deer harvest for the archery season was 7,025 deer (3,875 whitetail bucks, 2,585 whitetail does, 424 mule deer bucks, and 141 mule deer does). The success rate for the season was 24%. The five deer management units with the highest reported harvest were the Black Hills, Brown, Minnehaha, Brookings, and West Meade, accounting for approximately 22% of all archery harvest.

Satisfaction was also measured (1=very dissatisfied to 7=very satisfied) and the average response for this season was 4.76.

Muzzleloader Deer

There were 3,617 antlerless deer licenses (3,331 resident, 286 nonresident) and 1,019 “any deer” licenses issued for the 2013 Muzzleloader Deer season, which represented a total of 5,736 tags. A sample of 2,991 hunters were surveyed and 2,430 responded for a response rate of 81%. Approximately 72% of muzzleloader hunters used the Internet to respond.



The 2013 Muzzleloader season was open from December 1, 2013 through January 15, 2014, however only unfilled antlerless tags were valid from Jan. 1-15. This was the ninth year that “any deer” licenses were available for the muzzleloader season and 5,866 applications were received for those. The number of “any deer” licenses available was increased to 1,000 in 2008. Respondents averaged 4.14 days of hunting for a projected total of 17,896 recreation days for the season.

The estimated harvest for the Muzzleloader season was 1,340 deer (312 whitetail bucks, 821 whitetail does, 62 mule deer bucks, and 146 mule deer does). The overall success rate for the muzzleloader season was 23% and average satisfaction was 4.57 (1 = very dissatisfied, 7 = very satisfied).

The five deer management units with the highest reported harvest were Brookings, Black Hills, Roberts, Minnehaha, and Gregory, accounting for approximately 22% of the total statewide harvest.

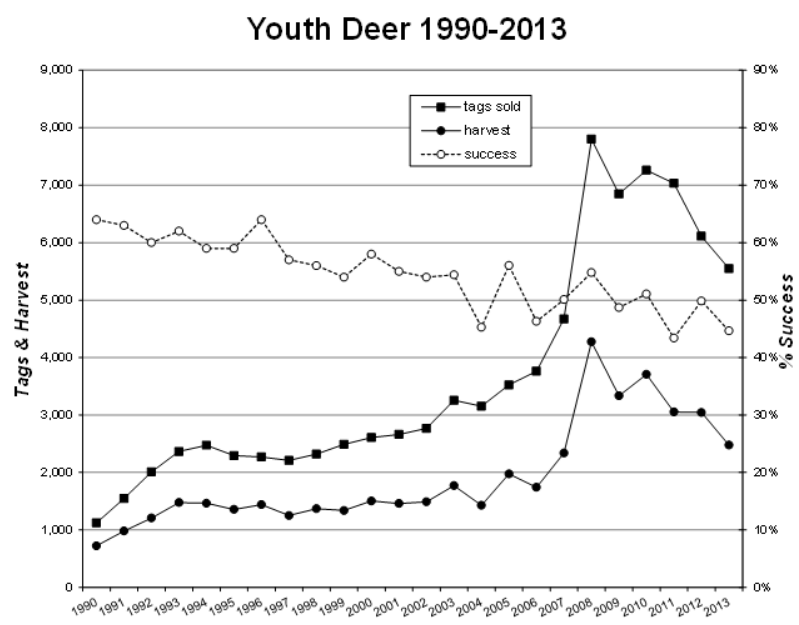
Youth Deer

There were 6,110 single-tag antlerless licenses issued for the 2013 Youth Deer hunting season (4,759 resident, 789 nonresident). Approximately 67% of hunters were sampled and 2,254 responses (76%) were received. Approximately 58% of responding hunters used the Internet to respond.

The Youth season ran from September 14, 2013 through January 15, 2014. Respondents reported hunting an average of 4.64 days each, which projected to 20,668 recreation days for the season.

Projections for the season indicated that a total of 346 whitetail bucks, 1,756 whitetail does, 32 mule deer bucks, and 344 mule deer does were harvested. The estimated total harvest for the Youth Deer season was 2,477, and the overall success rate was 45%. The five deer management units with the highest reported harvest were the Black Hills, Marshall, Brown, Beadle, and Spink, which accounted for 22% of the total youth season harvest.

The average satisfaction rating for those responding (1 being very dissatisfied and 7 very satisfied) was 5.23.



Mentored Youth Deer

There were 2,939 resident single-tag antlerless mentored youth deer licenses issued for 2013. All mentors/hunters were sampled and 2,310 responses (79%) were received. Approximately 70% of responding mentors/hunters used the Internet to respond. The Mentored Youth licenses were valid during the Youth Deer season which ran from September 14, 2013 through January 15, 2014. Respondents reported hunting an average of 3.87 days each, which projected to 11,374 recreation days for the season.

Projections for the season indicated that a total of 179 whitetail bucks, 1,028 whitetail does, 14 mule deer bucks, and 154 mule deer does were harvested. The total harvest for the Mentored Youth Deer season was 1,375, and the overall success rate was 47%. The five deer management units with the highest reported harvest were the Black Hills, Minnehaha, Beadle, Brookings, and Moody. The average satisfaction rating for those responding (1 being very dissatisfied and 7 very satisfied) was 5.57.

Summary for the 2008-2013 Mentored Youth Deer hunting seasons

YEAR	Licenses Sold	Harvest					Success	Avg Days Hunted	Average Satisfctn
		Bucks		Does		Total			
		WT	Mule	WT	Mule				
2008	1,110	79	13	489	106	687	62%	4.09	6.02
2009	1,627	132	16	624	164	936	58%	4.02	5.78
2010	2,174	128	17	947	152	1,244	57%	3.72	5.94
2011	2,335	143	14	872	171	1,200	51%	4.16	5.70
2012	2,497	207	28	1,015	182	1,431	57%	3.77	5.78
2013	2,939	179	14	1,028	154	1,375	47%	3.87	5.57

Landowner Free Antlerless Deer

There were 1,390 free single-tag antlerless licenses issued to qualifying resident landowners for the 2013 West River Deer, East River Deer, Archery Deer, Muzzleloader Deer, and Youth Deer hunting seasons. Approximately 44% of hunters were surveyed and 404 responses (78%) were received. Approximately 54% of responding hunters used the Internet to respond.

Free Landowner on Own Land Antlerless Deer licenses were valid for qualifying hunters from September 14, 2013 through January 15, 2014. Respondents reported hunting an average of 3.50 days each, which projected to 4,134 recreation days.

Projections for the season estimated that a total of 35 whitetail bucks, 359 whitetail does, 3 mule deer bucks, and 32 mule deer does were harvested. The total harvest for the Free Antlerless Landowner licenses was 430, and the overall success rate was 31%. The five deer management units with the highest reported harvest were Butte, Clark, Spink, Beadle, and Brown.

The average satisfaction rating for those responding (1 being very dissatisfied and 7 very satisfied) was 4.72.

Summary of the 2011-2013 Free Landowner Antlerless Deer license statistics

<i>YEAR</i>	<i>Licenses Sold</i>	<i>Harvest</i>					<i>Success</i>	<i>Avg Days Hunted</i>	<i>Average Satisfctn</i>
		<i>Bucks</i>		<i>Does</i>		<i>Total</i>			
		<i>WT</i>	<i>Mule</i>	<i>WT</i>	<i>Mule</i>				
2011	2,005	91	9	709	104	913	46%	3.80	4.78
2012	1,271	30	0	479	37	546	43%	3.02	4.92
2013	1,390	35	3	359	32	430	31%	3.50	4.72

National Wildlife Refuge Deer

There were a total of 231 licenses issued for the 2013 Wildlife Refuge Deer seasons, which included 132 at Sand Lake (121 residents and 11 nonresidents); 48 at Lacreek (46 residents and 2 nonresidents); and 51 at Waubay (46 residents and 5 nonresidents).

All license-holders for each season were surveyed and response rates for Sand Lake, Lacreek, and Waubay refuges were 83%, 82%, and 88%, respectively. Approximately 73% of survey respondents did so through the Internet.

The seasons had different opening dates at each refuge. The average days hunted were 2.48 at Sand Lake, 1.97 at Lacreek and 1.71 at Waubay.

The reported harvest at the refuges consisted of only white-tailed deer. The projected harvest for Sand Lake was 37 bucks and 18 does, for Lacreek was 11 bucks and 4 does, and for Waubay was 15 bucks and 1 doe. The projected success rate for Sand Lake was 41%, for Lacreek was 22%, and for Waubay was 31%.

Black Hills Deer

There were 3,591 single-tag licenses issued for the 2013 Black Hills Deer season (3,330 resident, 261 nonresident).

A random sample of 1,359 hunters was taken (38% of license holders) and there were 1,088 responses for an 80% return rate. Approximately 67% of responses were received through the Internet.

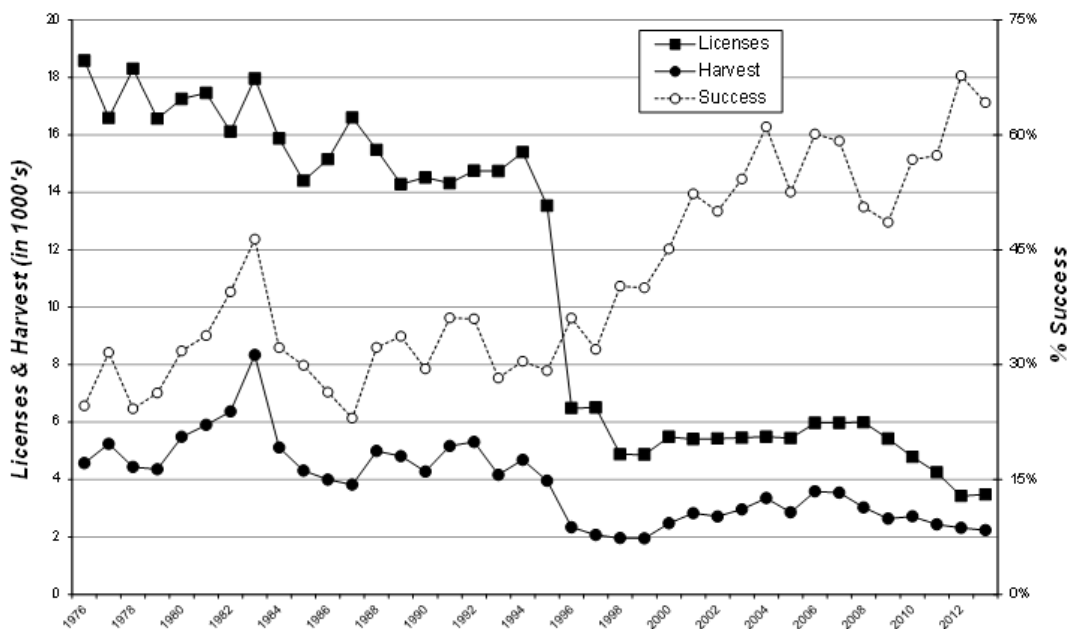
The season ran the usual month of November, a total of 30 days. The special antlerless season also ran the entire month of November, an increase from the 10-day season in 2004. Those responding reported hunting an average of 4.68 days, which projected to 16,797 recreation days for the season. Of those responding, 7% stated they did not hunt at all during the season.

The mean satisfaction score for all combined units was 5.27 on a scale ranging from 1 = “very dissatisfied” to 7 = “very satisfied”.

The harvest projection for the Black Hills Deer season was 2,294 deer (1,876 adult whitetail bucks, 36 fawn whitetail bucks, 286 adult whitetail does, 32 fawn whitetail does, 62 adult mule deer bucks, no fawn mule deer bucks, 1 adult mule deer doe, and 1 fawn mule deer doe). The overall season harvest success rate was 64%.

Including the estimated Black Hills harvest of 921 deer from the Archery, Youth and Muzzleloader seasons, approximately 3,215 deer were harvested in the Black Hills proper.

Black Hills Buck/Any Deer 1976-2013



ANTLERLESS ZONE MANAGEMENT

In an attempt to simplify antlerless deer units, merge related but different antlerless regulations, and provide some clarity to staff on options available under differing unit management objectives, SDGFP developed antlerless zone management strategies as follows for 2013:

Zone Management Options for Antlerless Deer Harvest

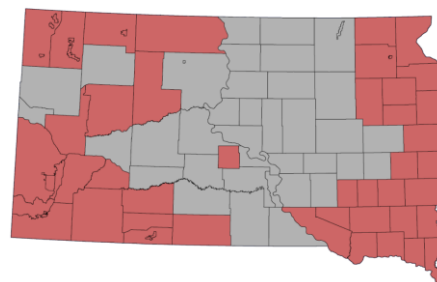
TOOLS	LIBERAL HARVEST	MODERATE HARVEST	RESTRICTIVE HARVEST
Population Objective	Decrease Population	Maintain Population	Increase Population
Firearm License Numbers	Liberal Unlimited per hunter after 3rd draw	Moderate All Available Licenses Sold in 1st and 2nd Draw ¹	Limited All Available Licenses Sold in 1st and 2nd Draw
License Types	Single, Double, and Triple Tag Licenses Antlerless-only Licenses Available	Single and Double Tag Licenses ¹ Antlerless-only Licenses Available	Single-tag Licenses only No Antlerless-only Licenses ²
Firearm Late Season	9-day Late Season	9-day Late Season	Closed: No Antlerless Licenses Issued ²
Youth Deer	Up to 2 Licenses	1 License	1 License
Archery Antlerless Deer	Up to 5 Licenses	1 Single-tag License	No Licenses
Muzzleloader Antlerless Deer	Up to 5 Licenses	1 Single-tag License	No Licenses
Landowner Free Antlerless Deer	Up to 2 Licenses ³	No Licenses ^{1,3}	No Licenses

Exceptions:

¹ When white-tailed deer population > population objective and mule deer population < population objective.

² Landowner-Own-Land deer licenses still valid as established by statute.

³ Landowner free antlerless deer licenses may or may not be available during the first year of implementing the liberal or moderate management package as established by 41:06:01:13.



RECRUITMENT SURVEYS

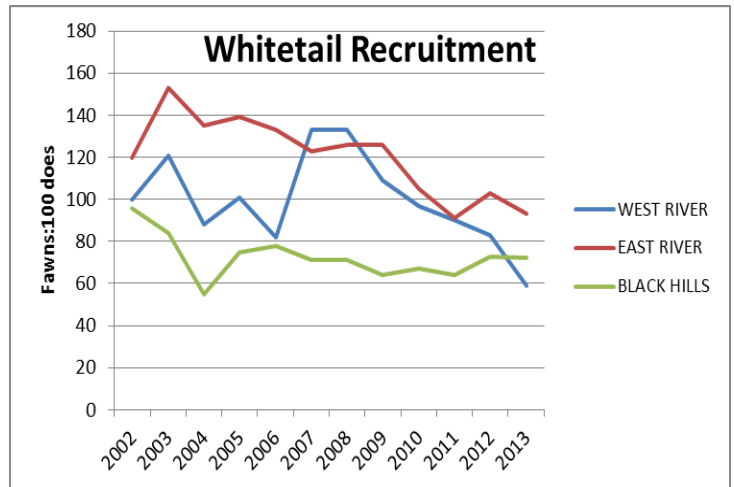
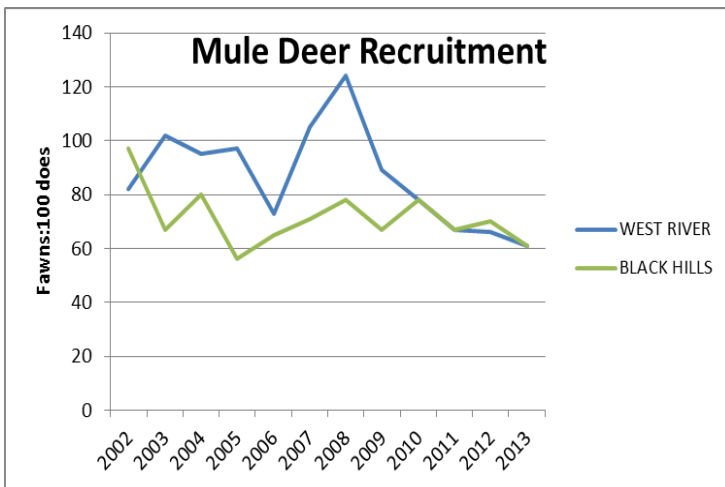
Fawn and doe classification counts were conducted in September and October to determine fall recruitment rates across the state. A total of 9,603 deer were classified during the fall of 2013; 1,611 deer for the Black Hills, 1,410 for West River Prairie and 6,582 for East River Management Units. Binomial (95%) confidence intervals are reported in parentheses.

Fall classification counts for 2013 in the Black Hills resulted in a whitetail fawn:100 doe ratio of 72 (95% CI: 65-81) and mule deer ratio of 61 (43-87). West River fawn per 100 doe ratios were 59 (49-71) for whitetails and 61 (52-70) for mule deer; east River whitetail age ratios were 93 (88-98) in 2013. Overall downward trends in recruitment have been observed in white-tailed deer both east and west river, and in mule deer west of the Missouri River.

Statewide sex ratios observed in 2013 were 32 whitetail bucks per 100 does (30-34) and 32 mule deer bucks:100 does (27-37).

Fall recruitment survey data for South Dakota, 2013.

	White-tailed Deer			Total	F:100D	B:100D	Mule Deer			Total	F:100D	B:100D
	# Fawns	# Does	# Bucks				# Fawns	# Does	# Bucks			
Region 1	123	182	60	365	68	33	243	383	101	727	63	26
Region 2	275	392	82	749	70	21	103	246	88	437	42	36
Region 3	1034	1162	454	2650	89	39				-	-	-
Region 4	1326	1350	388	3064	98	29				-	-	-
Prairie	2758	3086	984	6828	89	32	346	629	189	1164	55	30
West River	187	317	82	586	59	26	265	438	121	824	61	28
East River	2571	2769	902	6242	93	33	81	191	68	340	42	36
Black Hills*	515	711	213	1439	72	30	51	83	38	172	61	46
STATEWIDE	3,273	3,797	1,197	8,267	86	32	397	712	227	1,336	56	32



WORKING POPULATION ESTIMATES - DEER

All prairie deer units are divided into four data analysis units (DAU's). Deer within individual DAUs are assumed to have similar demographics. Annual survival (*s*) and hunter harvest mortality [*(hm)*-the proportion of total mortality caused from hunter harvest] rates are estimated based on recent research findings obtained in those designated DAU's through radio-collared individuals. Survival and *hm* rates are quantified separately between species and geographical area. The current year harvest projections (*h*) (including total harvest of all user groups combined) are calculated for each prairie deer unit and then analyzed at the DAU level. The pre-season population estimate (*N*) is then formulated for each DAU and combined for an East River and West River prairie estimate using the formula: $N = ((h)/(hm)) / (1-s)$. Pre-season estimates for deer are derived when populations are at their highest before any hunting or other sources of mortality have occurred. Therefore, pre-season

estimates for deer do not take into account additional mortality factors that occur on populations over the summer months. The pre-reproduction estimates (pN) (remaining population after all mortality factors are taken into account) are then derived for each DAU using the formula: $pN = (N) - ((h)/(hm))$.

Confidence intervals for population estimates are derived using Markov Chain Monte Carlo (MCMC) simulation methods in Program R. Standard errors are calculated for all survival input variables using the maximum likelihood estimator and sex and age ratio standard errors are calculated using the binomial proportion confidence interval estimator. One million random inputs are generated through MCMC simulations for each input variable from a probability distribution over the domain of each standard error. The results of the simulation are then aggregated to formulate the confidence interval for the population estimate of interest.

Population projections are then calculated for the next two years using current year fall deer herd composition data and 2009-2013 annual survival rates from radio-collared animals. Lambda (the annual rate of change overtime) is then calculated to indicate if the population of interest is increasing, decreasing or stable. Confidence intervals for lambda are developed using MCMC simulation methods in Program R, incorporating standard errors for all input variables. To predict how different license recommendations may impact λ , change in harvest is assumed to be additive, and the potential number of animals added or removed from the population is derived from the previous 3-year average success rate for that license type.

All Black Hills deer units are combined into one DAU. Black Hills deer populations are estimated separately for each species. Age and sex ratio data are obtained through the fall deer herd composition survey. Survival estimates and cause-specific mortality information quantified over the last 15 years is calculated using radio-collared individuals throughout the Black Hills. Predation rates are obtained through recent predator-prey interaction findings and these rates are included in modeling procedures along with the current year firearm, archery, muzzleloader, and youth hunter harvest information. Confidence intervals for (N) are derived through MCMC simulation methods in Program R. Projection modeling is performed to formulate lambda to indicate if the population of interest is increasing, decreasing or stable. Further advanced models will be developed when more recent survival and cause-specific mortality rates on deer in the Black Hills becomes available.

Species	Geographic Area	Estimate	95% CI	Time period
White-tailed Deer				
	East River & West River Prairie	317,100	220,400 – 413,900	Pre-season 2013
	Black Hills Proper	41,200	29,600 – 52,800	
Mule Deer				
	East River & West River Prairie	87,500	59,100 – 115,900	Pre-season 2013
	Black Hills Proper	8,700	5,700 -11,800	

SPORTSMEN AGAINST HUNGER (SAH)

In fall and winter 2013-14, the big game processing certificates are worth \$60 for each donated antlerless deer, and \$50 for each donated doe or fawn antelope. Some processors accept the

certificate value as full payment for processing donated animals and birds. For those processors who charge more than the certificate value for processing donated animals and birds, hunters are responsible for paying any remaining fee at the time of donation.

For Canada geese taken during the 2014 August Management Take season (August 3 - 31) and Early Fall Canada Goose Season (only during dates of September 1 - 20), each hunter will fill out one processing certificate for all of the birds bagged and donated that day by the hunter. Each certificate is worth \$4.00 per bird for the number of donated birds indicated on the certificate. All of the goose processors will accept the certificate as full payment for processing donated geese. For the second year a Spring Canada Goose Program (April 1 – May 3, 2014) was held in select East River counties where goose depredation occurs. A requirement for the hunt was that all geese taken had to be donated to SAH. Federal processing permits, processing certificates, processing and packaging were handled the same as for the goose donation program in August and September.

In fall and winter 2013-14, 48,102 pounds of game meat were provided to needy families through SDSAH and local food relief agencies. This meat was primarily a result of hunters donating 697 deer, 10 antelope, 3,280 pheasants and 4,717 Canada geese. Other game meat came from community game meat food drives, hunter direct donations of processed meat to food relief agencies, and salvage processing of confiscated or non-hunter killed game.

South Dakota hunters have now donated 750,394 pounds of venison to needy families.

DISEASE

Chronic Wasting Disease

Surveillance for chronic wasting disease (CWD) in South Dakota during the period of July 1, 2013 through March 15, 2014 resulted in the testing of 138 elk, 8 mule deer and 51 white-tailed deer, for a total of 197 samples. Most of the sampling again involved collection of heads of hunter-killed animals which were voluntarily submitted by hunters upon request by the Department of Game, Fish and Parks (GFP). No active sampling was conducted from vehicle killed animals, or from City deer reduction programs. Samples were obtained primarily from the Black Hills and extreme southwestern part of the state, with sick surveillance testing occurring statewide. South Dakota GFP asked hunters to submit all elk heads for sampling, and offered to sample deer heads for anyone submitting samples to the Game, Fish, and Parks Regional Office in Rapid City, SD.

Test results received on 193 of the 197 samples indicate 8 white-tailed deer, 3 mule deer, and 10 elk were CWD positive. Hunter harvest accounted for 10 of the CWD positive cervids (1 elk, 9 deer), and sick surveillance accounted for 11 of the CWD positive cervids (9 elk, 2 deer). The total number of CWD positive animals discovered in SD (including WICA) since the first free ranging white-tailed deer was found in the fall of 2001 is now 257, including 89 elk, 69 mule deer and 99 white-tailed deer. Wind Cave National Park (WICA) has reported 10 deer and 59 elk as positive for CWD since 2002 as part of these totals.

South Dakota Department of Game, Fish, and Parks will continue to review our surveillance program. In 2013_2014, we continued, as in the previous year, with a reduced CWD surveillance program, and we will continue to evaluate to what level we will test for CWD in South Dakota.

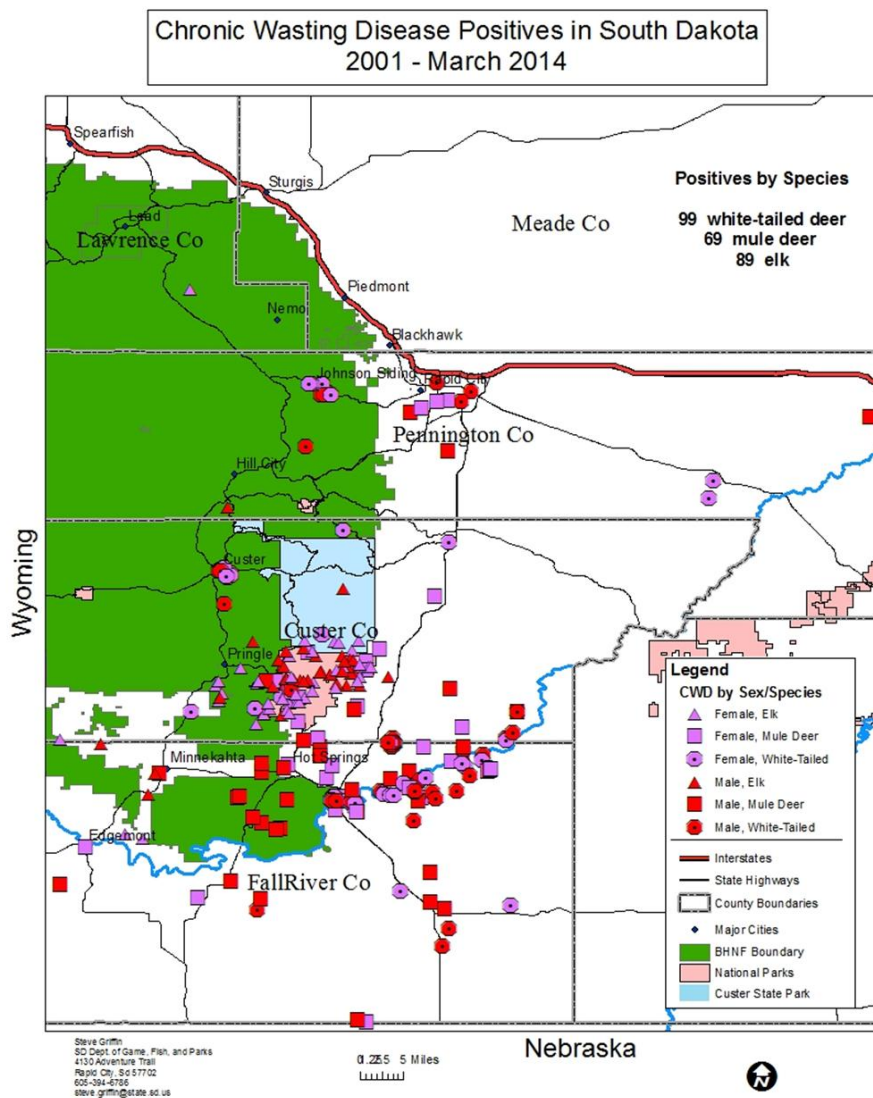
Epizootic Hemorrhagic Disease

The State of South Dakota experienced another substantial die-off of white-tailed deer during September-October 2013 due to Epizootic Hemorrhagic Disease (EHD) and Blue Tongue (BT). The South Dakota Department of Game, Fish, and Parks (SDGFP) started receiving reports of sick and deceased white-tailed deer during the late summer and early fall. As in previous years, we suspected EHD and efforts were made to

document the virus through the Diagnostic Lab at South Dakota State University. Through laboratory testing, we confirmed that both the EHDV and BTV virus was present in mainly white-tailed deer, but also confirmed in elk and pronghorn. The SDGFP continued to document sick and dead ungulates until mid-October when a substantial frost ceased EHD/BT disease transmission in most areas of the state.

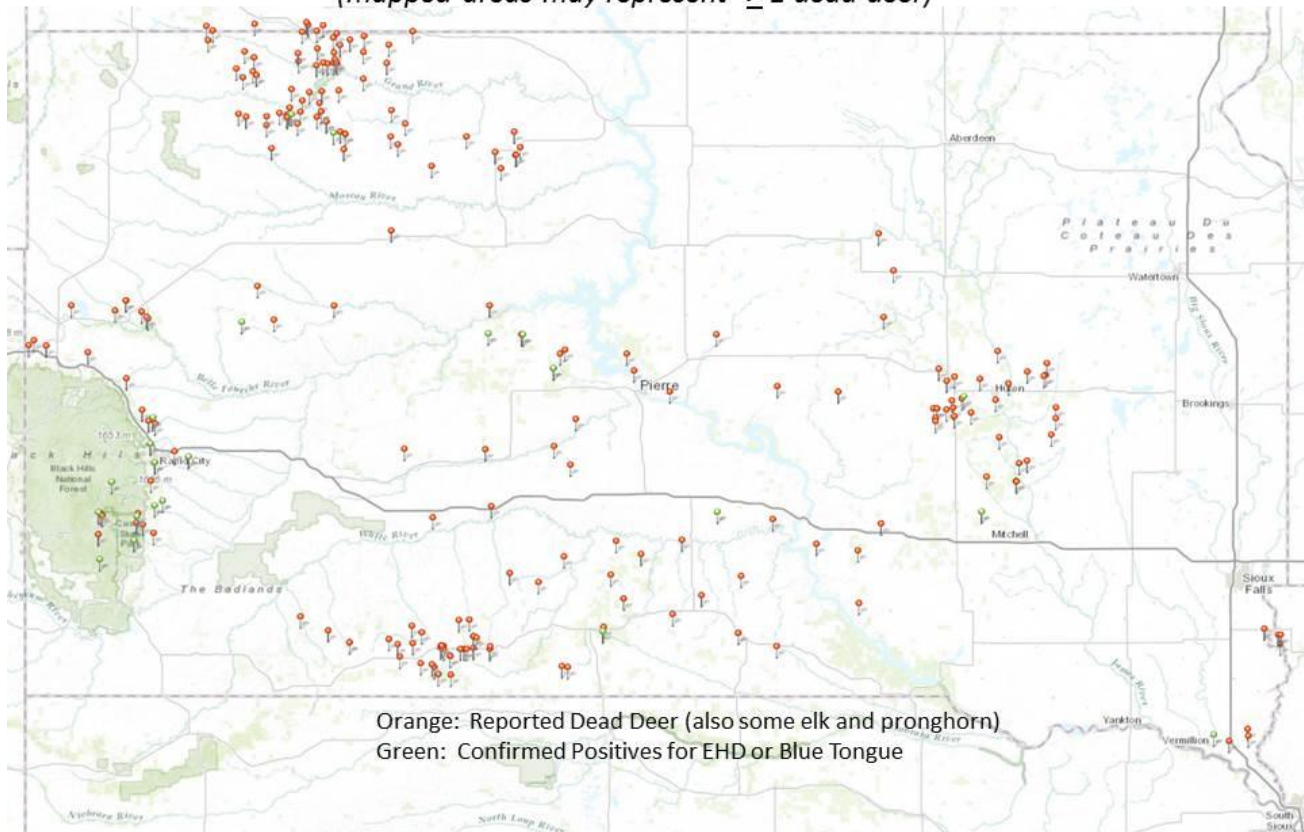
Eleven counties from across South Dakota had confirmed EHD virus [(14 cases) (serotypes ehdv-2, ehdv-1, and ehdv-6)] or Bluetongue virus [(11 cases) (serotypes btv-17, btv-11)] in white-tailed deer, elk, or pronghorn (Figure1). Most cases were found in western South Dakota with 681 deer, elk, pronghorn reported. In the eastern side of the state, 169 reports of dead or sick deer were recorded. A total of 850 dead or sick animals were recorded in 2013, which included 828 deer, 19 pronghorn, and 3 elk (Figure 2). Substantially fewer animals were reported lost to EHD/BT in 2013 (850) than in 2012 (3,714).

Due to the large number of white-tailed deer that were being lost to the disease in some areas, the SDGFP removed all or some unsold licenses from 2 West River counties [Perkins (41), Todd(72)], and 1 East River County [Sanborn(132)]. The Department also offered refunds to hunters who previously



received a deer license for Bennett, Corson, Perkins, and Todd counties in South Dakota if they voluntarily returned their licenses. License returns were received from Bennett County (111 licenses, 222 tags), Corson County (79 licenses, 158 tags), Perkins County (576 licenses, 1,152 tags), and Todd County (66 licenses, 198 tags).

2013 Reported Dead Deer
850 Total Individuals
(mapped areas may represent ≥ 1 dead deer)



RESEARCH

Current Deer Projects

Estimating population size of deer in the Black Hills (Kris Cudmore and Jon Jenks. South Dakota State University - SDSU) *Objectives:*

1. Estimate population size of deer in the Black Hills using general randomized tessellation stratified samples by 30 June 2015.
2. Compare estimates of population size of deer among management units by 30 June 2015.
3. Evaluate factors affecting population size of deer relative to management units in the Black Hills by 30 June 2015.
4. Develop population model and survey methodology and recommendations to South Dakota Department of Game, Fish and Parks for implementation in the Black Hills by 30 June 2015.

Evaluation of deer and pronghorn herd composition surveys (Kris Cudmore and Jon Jenks. SDSU)

Objectives:

1. Determine minimum sample size requirements
2. Compare September and October counts for deer, August and September for pronghorn
3. Compare spotlight and daylight counts
4. Assess feasibility of obtaining male:female ratios
5. Evaluate impacts of other survey variations such as a) counting all animals observed vs. only conclusive counts, b) distance from cover, and c) number of observers.

Dietary preference and nutritional quality of annual forages planted during late summer for white-tailed deer in eastern South Dakota (Troy Wieberg and Jon Jenks. SDSU). *Objectives:*

1. Determine preference and use of purple top turnips, winter rye, Austrian winter pea, Chicory, Daikon radish, and Crimson clover by captive white-tailed deer by 30 June 2015.
2. Quantify physical and nutritional characteristics among forage types and determine crude protein, phosphorus, crude fat and digestible dry matter for each species by 30 June 2015.
3. Assess feasibility of which forage types would be most suitable for late summer planting conditions in eastern South Dakota by 30 June 2015.
4. Formulate management recommendations that directly apply to maximizing deer harvest in highly depredated areas using annual forage plots by 30 June 2015.
5. Determine what annual forage species would be the most successful at luring deer away from winter depredation areas (i.e., hay yards and feedlots) by 30 June 2015.

Survival of white-tailed deer and mule deer fawns within various habitat types and geographical areas throughout South Dakota (Kevin Robling, et al. SDGFP) *Objectives:*

1. Estimate 6-month and annual survival rates of white-tailed deer fawns occupying agricultural landscapes in northeastern and southeastern South Dakota.
2. Estimate 6-month and annual survival rates of mule deer fawns occupying grassland habitats in central and western South Dakota.
3. Develop population models for white-tailed deer and mule deer in prairie and agricultural landscapes of South Dakota.

An assessment of mule deer population dynamics and trend indicators in the Black Hills, Badlands, and Missouri River regions of South Dakota (Andy Lindbloom, et al. SDGFP) *Objectives:*

1. Quantify annual and over-winter survival rates of fawn, yearling female, and adult female mule deer in the Black Hills, Badlands, and Missouri River breaks of South Dakota.
2. Determine cause-specific mortality of mule deer in the Black Hills.
3. Measure pregnancy and fetal rates of yearling and adult female mule deer.
4. Evaluate and compare annual recruitment estimates using fall herd composition and reproduction/fawn survival datasets.
5. Quantify and evaluate relationships between severe weather (winter and drought severity) and mule deer nutritional condition, survival, and reproduction/recruitment.
6. Evaluate distance sampling techniques to estimate mule deer populations and trends in the Black Hills.
7. Update SDGFP models to estimate mule deer populations, projections, and growth rates (λ).

Survival, cause-specific mortality, and reproductive rates of white-tailed deer in the Black Hills of South Dakota (SDGFP) Objectives:

1. Determine survival rates and cause-specific mortality of adult and fawn white-tailed deer in the Black Hills of South Dakota.
2. Determine reproductive rates of female white-tailed deer in the Black Hills.
3. Calculate population estimates for white-tailed deer occupying the Black Hills using obtained vital rates in Department population models and formulate an annual rate of change (λ).
4. Quantify hunter harvest mortality rates during years of varying harvest strategies.

Effects of Neonicotinoid Insecticides on Physiology and Reproductive Characteristics of Adult and Fawn Captive White-Tailed Deer (Jon Jenks and MS student TBD, SDSU) Objectives:

1. Document thyroid hormones in does exposed to Imidacloprid and control does to determine physiological responses of insecticide exposure via consumption of agricultural crops.
2. Determine Imidacloprid concentrations in milk of lactating female white-tailed deer.
3. Compare jaw and genital characteristics of white-tailed deer fawns born to does exposed to Imidacloprid and control fawns.

An Evaluation of the Impacts of Energy Development on Life History Parameters and Management of White-tailed Deer in the Cedar Creek Anticline of Southwestern North Dakota and Northwestern South Dakota (Jon Jenks and 3 MS grad students, SDGFP/NDGF/SDSU cooperative project)

Objectives:

1. Determine the impacts of oil and gas energy development and disturbance on movements and survival rates of white-tailed deer in the Cedar Creek Anticline of North and South Dakota.
2. Determine habitat selection and critical deer seasonal habitats and concentration areas in the Cedar Creek Anticline of North and South Dakota.
3. Determine cause-specific mortality factors on both radio-collared adults and neonate fawns.
4. Determine an annual rate change (λ) for white-tailed deer populations in the Cedar Creek Anticline of North and South Dakota.

The development of a Sequel Server database and R software package to model deer populations in South Dakota (Paul Lukacs and Josh Novak, University of Montana) Objectives:

1. Compile, evaluate, and analyze deer population data needed for population modeling.
2. Develop SQL database for all applicable deer population data.
3. Design appropriate level deer “data analyses units”.
4. Develop Program R population model, and user-friendly interface.
5. Complete cost: benefit analyses for additional deer data inputs.

WISCONSIN DEER STATUS REPORT, 2014

Midwest Deer & Wild Turkey Study Group
Trout Lodge YMCA, Potosi, Missouri

Current Harvest

Total harvest was 7% lower in 2013 than in 2012, antlered harvest was 13% lower and antlerless harvest was 2% lower. The decline in buck harvest was believed to be partly due to the late opening day of the November 9-day gun season (November 23rd) and very cold and windy weather in the first half of the season.

Season	Antlered			Antlerless			Total		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Early Archery	42,360	43,197	39,747	38,094	38,587	39,744	81,399	82,677	80,262
Youth Hunt	1,942	3,364	2,591	2,966	5,072	4,057	4,956	8,515	6,693
Oct. Antlerless*	32**			1,923			2,033		
9-day Gun	100,758	112,521	96,172	126,415	131,901	132,090	228,629	246,041	229,890
Muzzleloader	2,395	2,348	2,491	4,665	4,792	4,181	7,126	7,183	6,729
Late CWD	1,189	1,187	902	2,817	3,758	2,491	4,111	5,074	3,458
Dec. Antlerless	80	49	65	10,429	7,064	8,069	10,656	7,234	8,233
Late Archery	2,083	2,791	1,770	6,645	8,656	5,526	8,801	11,590	7,366
Off-reserv. Tribal	508	666	542	831	943	817	1,340	1,609	1,359
Total	151,347	166,123	144,280	194,785	200,773	196,975	349,051	369,923	343,990

* October Antlerless season was only available in the CWD Management Zone in 2011 and was discontinued in 2012.

** Disabled hunters and members of the armed forces on leave may harvest antlered deer during antlerless-only seasons.

Buck Harvest Density

Buck harvest density in 2013 varied among deer management units from less than 1 to more than 6 bucks/mi² of land area. Management units with the highest buck harvest density were mostly in the east-central, west-central, and southwestern parts of the state. Units with the lowest buck harvest densities were mostly in north-central, northeastern, and southeastern Wisconsin. The abundance of woodlands interspersed with agriculture throughout much of central and southwestern Wisconsin results in high quality deer habitat. This together with relatively mild winters in these regions in most years facilitates higher deer densities than in northern Wisconsin.

Miscellaneous facts

State land area: 54,313 mi²

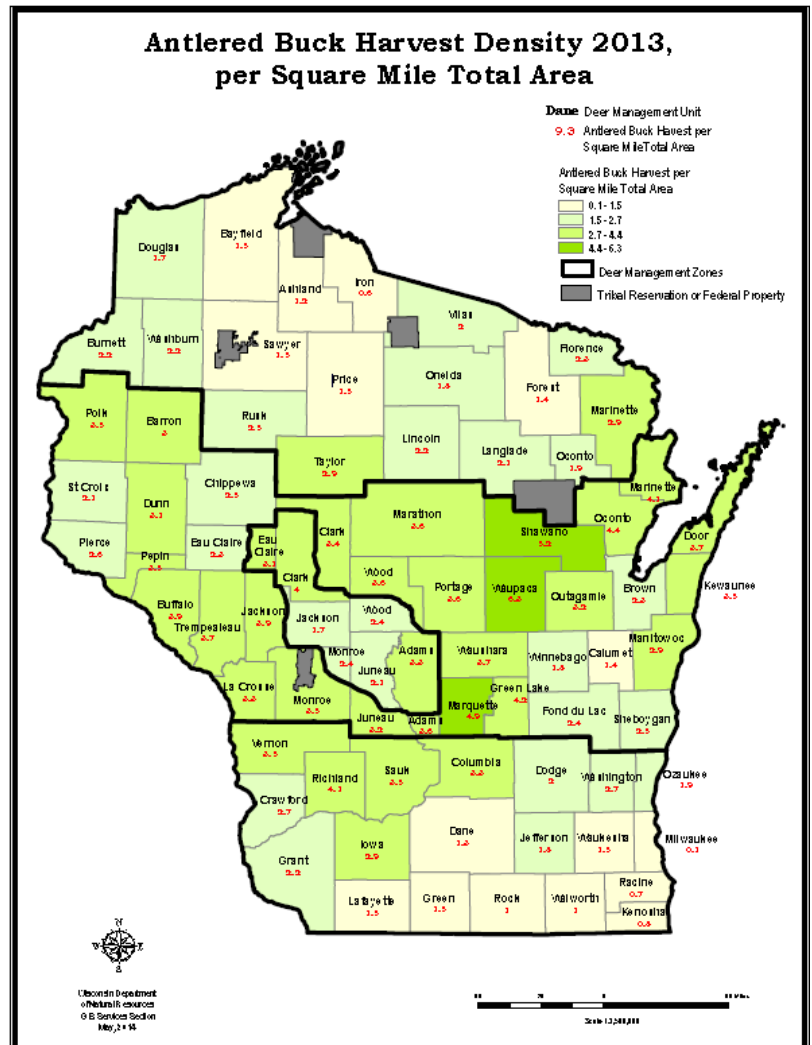
2013 deer hunting licenses purchased:

Archery -- 266,573 Gun -- 635,165

Licensed deer hunters -- 671,226

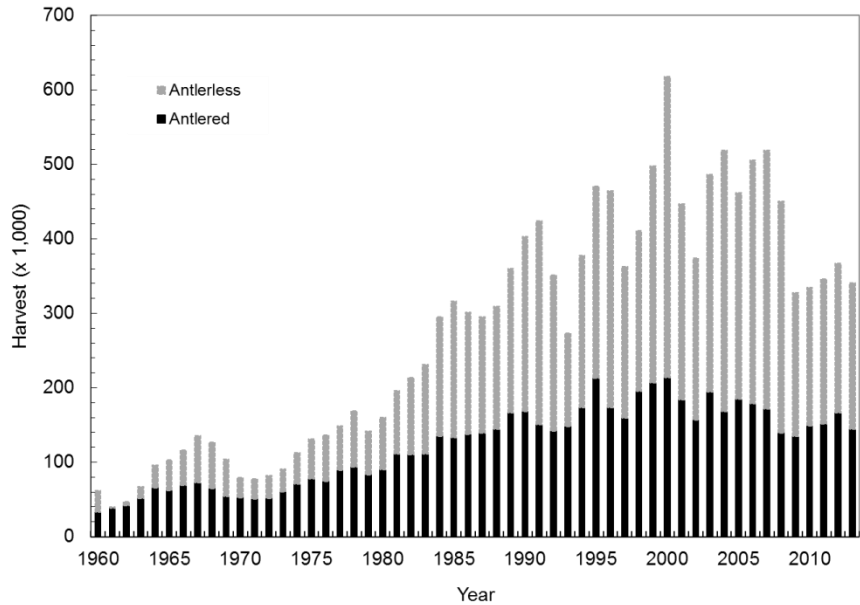
37% of hunters harvested 1 or more deer

2013 deer hunting accidents: 8 non-fatal.



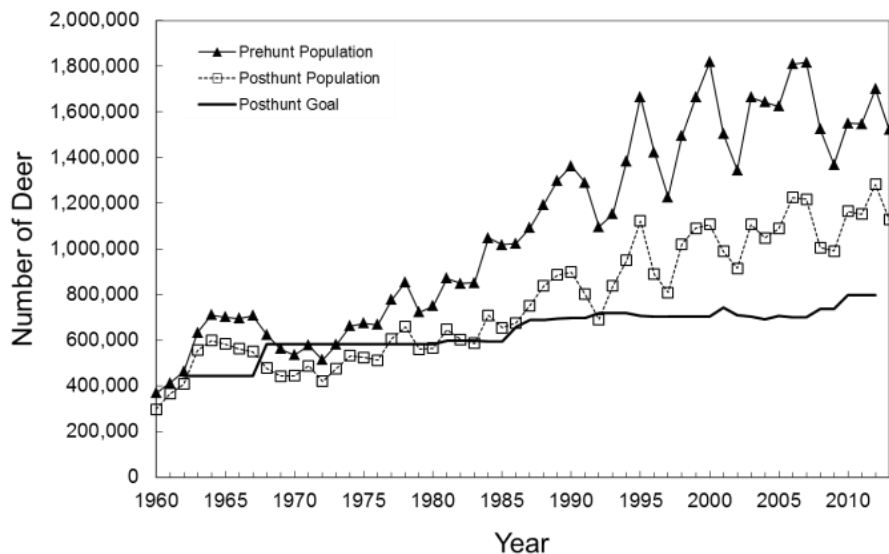
Historical Harvest

During the 1960s and early 1970s, total harvest averaged about 90,000. Total harvest increased steadily during the late 1970s and 1980s, largely due to population growth in the farmland regions. An all-time record harvest of 618,274 was set in 2000. After a marked decrease in harvest in 2001 and 2002, harvest during 2003-07 averaged about 500,000 deer, with about 64% of the harvest composed of antlerless deer. Total harvest decreased 42% between 2007 and 2009. Since 2009, total harvest was increasing annually until the drop in 2013. Antlerless deer comprised an average of 56% of the harvest during the past 5 years. The proportion of harvest taken by archers has increased steadily during the past 50 years to where archers accounted for 26% of the total harvest and 29% of the antlered buck harvest in 2013.



Population Estimates and Trends

Population estimates were based on Sex-Age-Kill calculations and accounting models calibrated to aerial surveys. The 2013 prehunt population estimate was approximately 1.5 million and the posthunt estimate was approximately 1.1 million. Posthunt deer populations in Wisconsin fluctuated around 500,000 during the 1960s and 1970s. During the 1980s and 1990s, the population generally increased with occasional short-term declines due to poor recruitment following severe winters and/or intensive antlerless harvests. Most of the statewide increase in deer populations over the past 40



years was due to growth in the farmland regions of the state. Higher antlerless harvests during the mid-2000s together with below average recruitment reduced populations in portions of the state. Reduced antlerless harvests since 2009 have set the stage for renewed population growth.

Deer Management Units/Zones



2014 DEER SEASON STRUCTURE

Archery and Crossbow – Sept. 13 - Jan. 4 - Statewide

Gun Deer Seasons

Northern Zone -- Youth (Oct. 11-12, 2 days) + Nov. Gun (Nov. 22 – 30, 9 days) + Muzzleloader (Dec. 1 - 10, 10 days)

Central Forest and Farmland Zones -- Youth + Nov. Gun + Muzzleloader + Dec. Antlerless-only (Dec. 11-14, 4 days)

Southern Farmland Zone -- Youth + Nov. Gun + Muzzleloader + Antlerless-only Holiday Hunt (Dec. 24 -Jan. 1, 9 days)

Metro Subunits -- Archery Season: Sept. 13 - Jan. 31 -- Gun Season: Nov. 22- Dec. 10

Regulation and Statute Changes

A large package of Administrative Rule changes was approved by the Natural Resources Board in January. This rule package was the outcome of the 2012 Deer Trustee Report (DTR, Kroll et al.). Development of the rule proposal included review of DTR recommendations by 4 citizen action teams, public hearings held at 35 locations throughout the state, a web-based survey, meetings with tribal leaders, and meetings with representatives of various conservation and stakeholder organizations. The overall goal of the DTR was to enhance deer hunting enjoyment, improve management and research through increased communication, address areas of concern expressed by the hunting public, and to further increase public involvement in the decision-making process.

Management Units and Zone

- Deer Management Units that used road and/or river boundaries were eliminated and replaced with units based on county boundaries and tribal reservations.
- Four management zones were created as a framework for regulating season structure. Nine counties were split by zone boundaries.
- The CWD Management Zone was eliminated.
- Numeric population goals were eliminated, replaced with population trend objectives.
- Separate state park units were eliminated.

Seasons and Bag Limits

- A new crossbow season was created that is concurrent with the archery season. Requires a separate license.
- Archery and crossbow seasons remain open during the November gun season.
- December 4-day antlerless-only season now occurs only in Central Farmland and Central Forest zones.
- Holiday hunt was shortened by 3 days, occurs within Southern Farmland Zone, and is now antlerless-only.
- 17 of 18 Northern Forest Zone and 2 of 7 Central Forest Zone units are bucks only in 2014.
- White and albino deer are now protected statewide, previously could be harvested in CWD Management Zone.

Licenses and Tags

- Hunters who purchase both archer and crossbow licenses will receive only 1 buck tag.
- Free statewide archery antlerless tag was eliminated.
- Free CWD Management Zone antlerless tags and \$2 Herd Control Antlerless tags eliminated.
- One free antlerless tag is issued with each deer hunting license that is valid in Farmland Zones only.
- Additional unit-specific bonus antlerless tags may be purchased for \$12 (resident) or \$20 (nonresident) if available. Bonus antlerless tags are land type specific (public or private). Bonus tags sold first-come, first-serve.

eRegistration Pilot

- Some hunters will be randomly selected to participate in an electronic registration pilot in 2014.

Bonus Bucks

- Hunters who harvest antlerless deer in the Southern Farmland Zone in 2014 can earn a bonus buck authorization that allows them to harvest 1 additional buck. Bonus buck stickers earned in 2013 can be used in 2014. Bonus buck stickers earned in 2014 may or may not be valid in 2015.
- Hunters must first register their antlerless deer to obtain a bonus buck sticker.

DMAP and CDACs

- Creates the Deer Management Assistance Program (DMAP) and County Deer Advisory Councils (CDACs). See below for more detail.

Winter 2013-14

The average winter severity index (WSI) for the 34 northern Wisconsin recording stations with complete records was 149. This was rated as very severe and was the highest WSI recorded since record keeping began in 1960. Average WSI during the previous 30 years was 55. On average, snow depths greater than or equal to 18 inches were recorded on 79 days in 2013-14 and minimum temperatures less than or equal to 0°F

occurred on 70 days. Below zero temperatures started in late November in much of the north and snow depths of 18 inches were reached by Christmas in areas in the northwest. By late January snow depths had reached 18 inches across most of northern Wisconsin and deep snow persisted into late March throughout most of the north and into the first third of April in parts of the northwest.

Wildlife managers examined 166 deer that were believed to have died from winter severity. Approximately 70% of the deer whose age was reported were fawns. Reports were received from 43 counties from both forested and farmland regions. In response to the severe winter most of the northern forest zone and parts of the central forest zone will be bucks only in 2014.

County Deer Advisory Councils (CDACs)

Beginning in September 2014, each county in Wisconsin will have a deer advisory council to provide the department with recommendations on deer population objectives, antlerless quotas and herd management strategies. The councils will review and consider scientific metrics on deer herd trends, impacts to habitat and agriculture, and human-deer interactions and will gather public opinions to inform their recommendations on deer population objectives and antlerless quotas.

County councils will be chaired by a member of the Wisconsin Conservation Congress. Stakeholder groups invited to be represented on these councils include a hunting/sporting group, agriculture, forestry, local government, transportation, tourism, tribal interests, and the Deer Management Assistance Program. At least three members of each council must have purchased deer hunting licenses in seven of the past 10 years.

Councils will work with local wildlife biologists to schedule meetings, provide community outreach, review deer metrics, and develop their recommendations. All meetings will be open to the public. Three meetings are expected in fall 2014 to develop 3-year recommendations on population trend objectives and three meetings are planned for late winter/early spring to develop antlerless quota and season framework recommendations. Recommendations developed by the CDACs must still be approved by the Natural Resources Board.

Deer Management Assistance Program (DMAP)

Wisconsin's DMAP was created through legislation and administrative rule. The department is working with a number of conservation organizations and agencies to develop a program that is appropriate for Wisconsin. Program objectives include promoting sound land stewardship, providing outreach to landowners about wildlife habitat management, providing a mechanism for site-specific deer management, and improving relationships between the WDNR and landowners. Landowners can enroll in one of three program levels. Level 1 has no minimum acreage, no enrollment fee, and provides DMAP educational resources, technical assistance from department staff, annual program reports and an opportunity to attend annual workshops. Level 2 has a 160 acre minimum, a \$75 enrollment fee, and provides all of the Level 1 benefits plus on-site consultation with a wildlife biologist and/or forester, a property management plan with habitat and harvest recommendations, property specific harvest reports and reduced price antlerless harvest tags. Level 3 has a 640 acre minimum, a \$150 enrollment fee, and provides all of the Level 2 benefits plus assistance with deer monitoring, assistance with enrollment in other conservation programs, and technical assistance and design for property habitat management activities. Levels 2 and 3 have a 3 year commitment and landowners at these levels are expected to collect and report data on the deer that they harvest that may include age, antler dimensions, weight, etc.

The 2014 application deadline was May 30th. Approximately 75 applications covering more than 40,000 acres were submitted for levels 2 and 3 during the initial sign-up. After initial training sessions in early summer, wildlife biologists conducted site visits on these properties in late summer 2014. Currently, technical assistance is being provided to over 300 landowners included on DMAP applications.

Wildlife Damage Abatement and Claims Program

During 2013, 755 crop owners enrolled in the Wildlife Damage Abatement and Claims Program (WDACP) for deer damage abatement assistance. Appraised deer damage totaled \$1,759,298. Forty-three percent of

appraised deer damage was to corn, 17% to soybeans, 11% to orchards and nursery stock, 10% to forage, and 9% to fruits and vegetables. During the past 20 years, appraised deer damage averaged approximately \$1,749,000 (range \$1,201,192 - \$2,865,572).

The most commonly used abatement measure was deer damage shooting permits. In 2013, we issued 617 Agricultural Damage Deer Shooting Permits under which 3,733 deer were removed. In addition, 71 Nuisance Deer Shooting Permits were issued for urban, airport, and nuisance situations, resulting in the removal of 453 deer.

In 2013, WDACP paid 75% of the cost for construction of 3 permanent fences to protect 21.4 acres on farms with a history of deer damage to high value crops (e.g., cranberries, strawberries, orchards, and tree nurseries). Landowners enter into a 15 year agreement to maintain the fences.

Since 2000, the WDACP has been authorized to pay for processing venison donated to food pantries. In 2013, 120 meat processors in 57 counties participated in the donation program. In those counties, hunters donated 2,265 deer amounting to approximately 102,000 pounds of venison. The cost of the venison donation program in 2013 was approximately \$141,163, 92% for venison processing and 8% for advertising and administration.

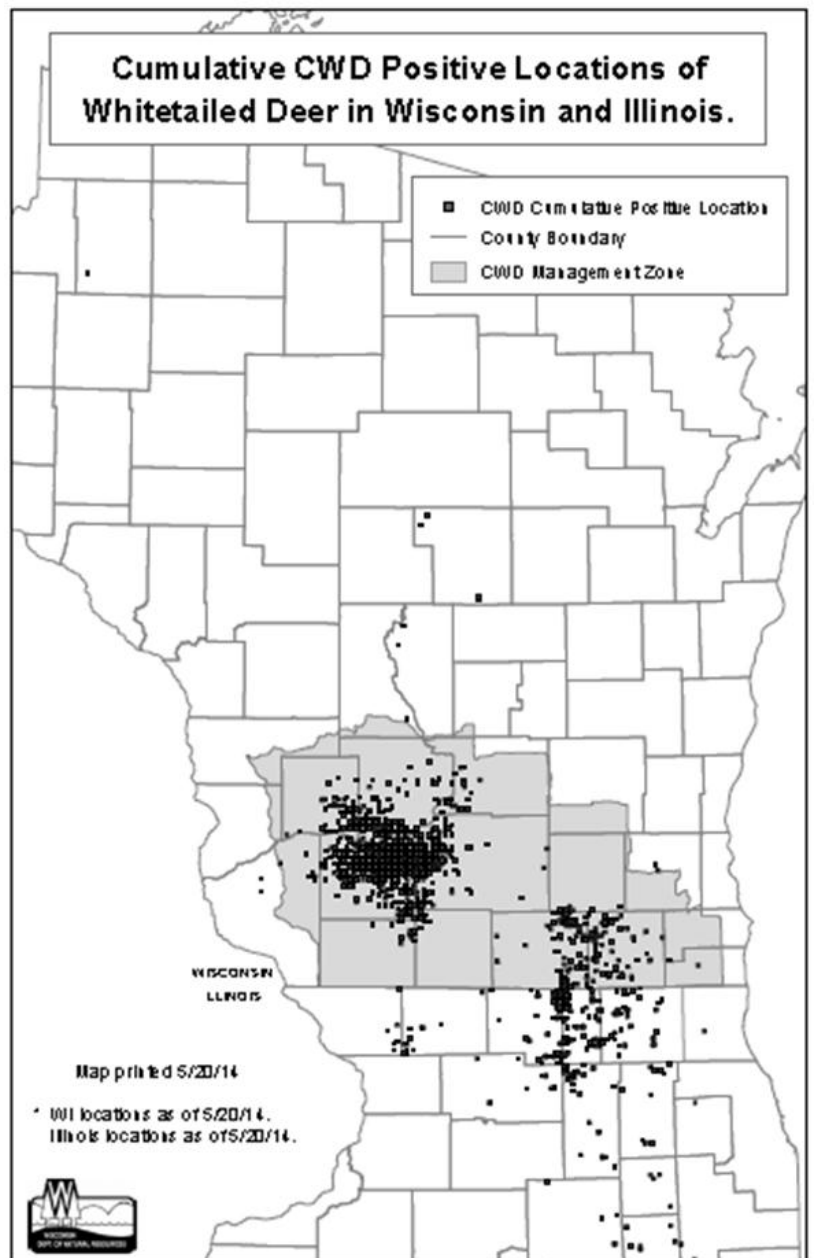
Chronic Wasting Disease

CWD has been detected in 18 of Wisconsin's 72 counties. Surveillance activities in 2013 focused on the long-term monitoring areas in CWD Management Zone, selected counties along the outer edge of the CWD-MZ, and areas in central and northern Wisconsin where outlying positives had been detected. Approximately 6,600 deer were tested during 2013. A second positive was detected in northwestern Portage County near a depopulated captive cervid facility and 2 deer tested positive that were harvested outside of another depopulated captive cervid farm in southern Portage County. A second positive was detected in western Adams County.

CWD prevalence rates continue to increase in southern Wisconsin. In northcentral Iowa County, prevalence in males ≥ 2.5 years old has risen to 30%.

Two deer from a captive hunting preserve in eastern Marathon County tested positive for CWD (not shown on map).

The CWD Management zone was eliminated from Administrative Code and was replaced by the term "CWD Affected Area". The affected area applies to all counties where CWD has been detected in wild or captive cervids and counties within 10 miles of CWD positives. It currently includes 35 counties. Baiting and supplemental feeding are banned in the CWD Affected Area.





Wild Turkey Hunter Harvest, Brood Survey, & Turkey Observation Report – 2014

Forest Wildlife Program, Illinois Department of Natural Resources
Midwest Deer & Wild Turkey Study Group Meeting



October 2014

Hunter Harvest

Spring 2014 turkey harvest (13513) saw a 4.4% drop compared to that of the 2013 season (14133). The Youth Season portion (781; North, 409; South, 372) was down 14.8% compared to the 2013 tally (923). The 2013 fall archery total of 629 was down 14.5% compared with 2012 (736). The 2013 fall gun total of 562 was down 5.7% from 2012 (596). All turkey harvest is reported electronically.

Turkey Surveys

Brood Survey Procedure: Surveys were mailed to 2,032 cooperating landowners, mail carriers, biologists, conservation police officers, state park and wildlife area managers, National Wild Turkey Federation chapters, and Soil and Water Conservation District employees. Each survey consisted of 3 postcards (one each for the months of June, July, and August). Observers were asked to record sightings of hen turkeys and turkey broods for each survey period, and return the prepaid postcards at the end of each month. As of 10/15/2014, 608 cards had been returned.

The Poul/Hen Index is calculated as follows:

$$\text{Poult/Hen Index} = \frac{\text{Total Number of Poults Reported}}{\text{Total Number of Hens Reported}}$$

Deer Hunter Survey Procedure: Successful deer hunters from all firearm and archery seasons were required to register their harvest on the same calendar day as the deer was taken. As part of the registration process, these hunters were asked to report the total number of wild turkeys observed during their hunt.

The Hunter Turkey Sighting Index is calculated as follows:

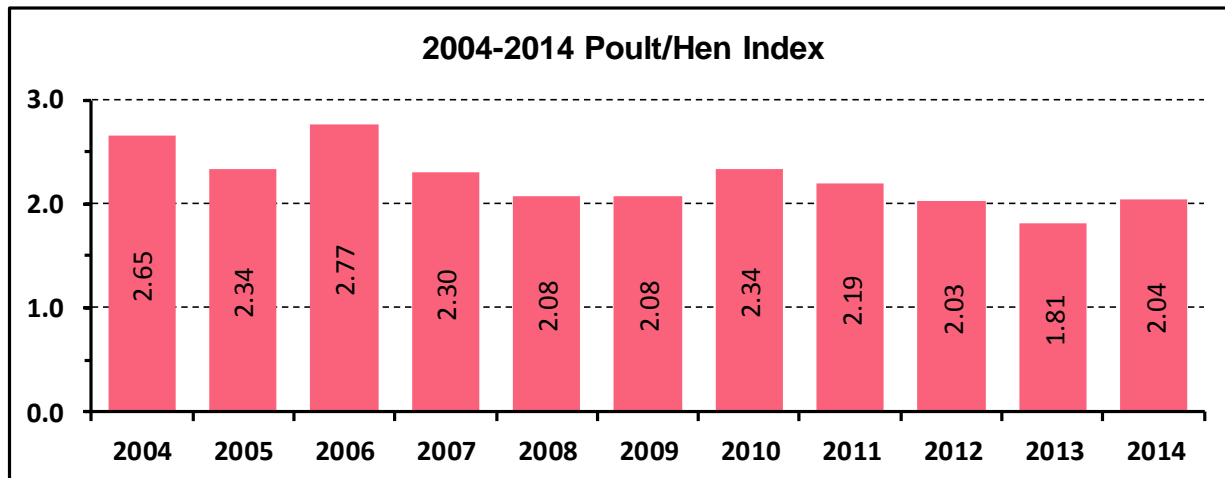
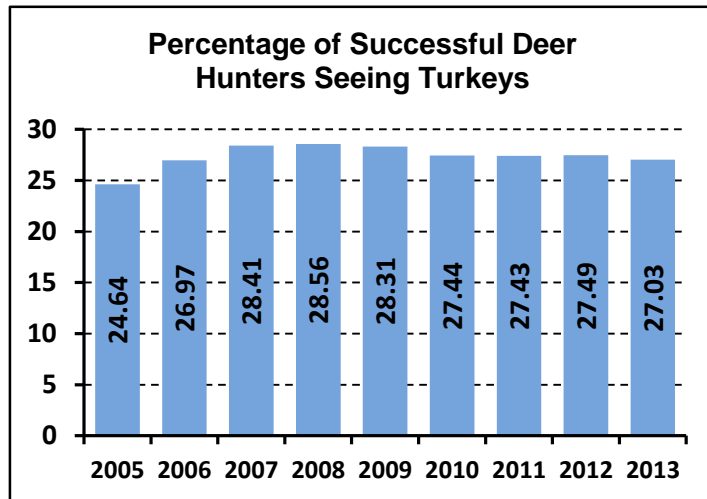
$$\% \text{ Hunters Seeing Turkeys} = \frac{\text{Total \# of Hunters Seeing Turkeys}}{\text{Total \# of Successful Hunters}} \times 100$$

2014 Results: Poul/Hen Index by Management Region

Region	Hens w/ Broods	Hens w/o Broods	Poults Observed	Poult/Hen Index
1	342	191	1554	2.92
2	39	115	173	1.12
3	81	61	354	2.49
4	274	485	1102	1.45
5	625	684	2735	2.09
Totals	1361	1536	5918	2.04

Significant Findings: Up slightly from 2013, the 2014 statewide poult/hen index of 2.04 was somewhat below the previous 10 year mean of 2.22, but comparable to the 5-year average of 2.08. The 2013 Deer Hunter Turkey Sighting Index of 27.03 was slightly below the previous 5 year average of 27.86.

YEAR	# Hens With/Without Broods	# Poults	Poults/Hen Index
2004	1,590	4,219	2.65
2005	1,389	3,251	2.34
2006	1,746	4,834	2.77
2007	2,631	6,051	2.30
2008	2,109	4,387	2.08
2009	2,789	5,798	2.08
2010	2,129	4,975	2.34
2011	2,264	4,957	2.19
2012	2,658	5,387	2.03
2013	2,342	4,248	1.81
2014	2,897	5,918	2.04
Prior 10-Yr Mean	21,647	48,107	2.22



2013 Deer Hunter Wild Turkey Sighting Information (All Deer Seasons)

Region	# Successful Hunters	# Hunters Observing Turkeys	Total # Turkeys Seen	Average # Turkeys Observed by Hunters Seeing Turkeys	Average # Turkeys Observed by All Hunters	% of Successful Hunters Seeing Turkeys
1	36368	9376	170533	18.19	4.69	25.78
2	4938	778	12444	15.99	2.52	15.76
3	15432	3076	44244	14.38	2.87	19.93
4	44067	12266	184663	15.05	4.19	27.83
5	47809	14667	321608	21.93	6.73	30.68
Statewide	148614	40163	733492	18.26	4.94	27.03

Preliminary Harvest Results of the 2014 Spring Turkey Season

County	2013	2014
Adams	290	300
Alexander	115	134
Bond	158	143
Boone	69	57
Brown	205	201
Bureau	121	135
Calhoun	264	196
Carroll	229	228
Cass	215	187
Champaign	19	15
Christian	50	46
Clark	146	125
Clay	237	197
Clinton	80	81
Coles	36	29
Crawford	152	132
Cumberland	53	42
DeKalb	13	16
DeWitt	41	41
Douglas	13	4
Edgar	84	80
Edwards	104	112
Effingham	109	84
Fayette	246	203
Ford	14	13
Franklin	188	169
Fulton	328	364
Gallatin	106	116
Greene	175	149
Grundy	42	36
Hamilton	220	228
Hancock	185	243
Hardin	162	138
Henderson	127	135
Henry	75	75
Iroquois	56	51
Jackson	301	322
Jasper	93	76
Jefferson	411	399
Jersey	201	142
Jo Daviess	552	594
Johnson	249	243
Kane	3	0
Kankakee	34	33
Kendall	10	16
Knox	207	208
Lake	1	0
LaSalle	101	106
Lawrence	117	109
Lee	87	62
Livingston	19	17
Logan	26	27

County	2013	2014
Macon	26	20
Macoupin	293	259
Madison	233	226
Marion	344	298
Marshall	58	53
Mason	164	124
Massac	97	81
McDonough	91	91
McHenry	44	65
McLean	66	53
Menard	97	66
Mercer	177	188
Monroe	166	150
Montgomery	159	189
Morgan	144	138
Moultrie	28	21
Ogle	167	150
Peoria	130	128
Perry	243	215
Piatt	8	6
Pike	396	298
Pope	360	352
Pulaski	111	121
Putnam	38	35
Randolph	333	326
Richland	121	108
Rock Island	176	173
Saline	129	122
Sangamon	85	85
Schuyler	179	190
Scott	67	59
Shelby	83	81
St. Clair	120	89
Stark	8	2
Stephenson	169	203
Tazewell	60	66
Union	294	301
Vermilion	122	115
Wabash	41	46
Warren	56	70
Washington	133	142
Wayne	333	299
White	136	135
Whiteside	167	172
Will	61	36
Williamson	252	286
Winnebago	155	143
Woodford	74	78
Statewide	14133	13513

Statewide Turkey Harvest, by Season, 1995 – 2014

	Youth	Spring	Fall Gun	Archery	Total
1995	--	6,918	885	163	7,966
1996	--	7,262	862	165	8,289
1997	--	7,134	976	277	8,387
1998	--	9,125	1,203	299	10,627
1999	--	10,061	1,460	470	11,991
2000	--	11,494	1,715	542	13,751
2001	75	12,840	1,427	537	14,879
2002	198	14,106	1,495	545	16,344
2003	346	14,631	1,368	555	16,900
2004	498	15,066	1,485	680	17,729
2005	450	14,962	1,120	692	17,224
2006	512	15,628	1,197	717	18,054
2007	570	14,197	1,161	754	16,682
2008	635	15,159	878	731	17,403
2009	617	15,487	760	821	17,685
2010	729	15,836	719	704	17,988
2011	748	14,373	638	678	16,437
2012	1300	14,641	596	736	17,273
2013	923	13,210	562	629	15,324
2014	781	12,732			

INDIANA WILD TURKEY STATUS REPORT

38th Annual Midwest Deer & Wild Turkey Study Group Meeting,
YMCA Trout Lodge in Potosi, Missouri Tuesday-Friday, September 9-12, 2014

Steven E. Backs, Wildlife Research Biologist, Division of Fish and Wildlife, 562 DNR Rd., Mitchell, IN 47446
TX: 812-849-4586 (ext 222); Fax 849-6013; Email: sbacks@dnr.IN.gov

Note: Complete results of turkey population and harvest surveys found at: <http://www.in.gov/dnr/fishwild/3352.htm>

WILD TURKEY PRODUCTION AND POPULATION SURVEYS

Summer Brood Survey

District wildlife biologists and conservation officers' record observations of wild turkey hens and poults during normal duty hours in July and August. The 2013 statewide mean production index was 2.0 total poults: total adult hens (PI), with 20% fewer total poults/total adult hen and 13% fewer hens observed with broods compared to 2012. The 2.0 PI was not significantly different ($P > 0.05$) from the confidence limits of the 5 year mean of 2.2, but 2013 was the second lowest PI since the survey began in 1993 (**Figure 1**). Since 1993, the average PI has progressively declined, evident in the long term trend line, with 4 of the last 5 years falling below the long term log trend line. Climatically, the spring/early summer of 2013 had above normal precipitation and below normal temperatures, marking the 8 consecutive year of flooding events in various regions of the state associated with the nesting and early brood rearing periods of June (e.g. 2013 in west-central, southwest, and southeast Indiana). Brood success for 2014 is anyone's guess at this point but we have experienced one of the coolest summers of recent history with above normal precipitation.

Roadside Gobbling Counts

Roadside gobbler trend routes (10 routes; 14 counties; 15 stops/route) are conducted annually (late March to April) in conjunction with roadside trend routes for ruffed grouse. The number of male wild turkeys heard gobbling along the traditional 10 control roadside routes during 1-28 April 2013 was 0.69 gobblers heard per stop, a 20% decrease compared to the gobbling index of 0.86 in 2012. Four new routes were re-established in 2012 to expand the statewide coverage and experienced a 15% decrease in 2013 compared to 2012. Overall, the statewide gobbling index for the 14 routes decreased 19% in 2013. The long-term trend, based on a 5-yr moving average, shows a general increase from 1987-2006, followed by a general decrease since the 2006 peak (**Figure 2**). The 2013 gobbling index of 0.73 was not different than the 5 yr-mean ($P > 0.05$) likely due to the addition of values from the 4 routes added in 2012.

WILD TURKEY HARVESTS

2013 Fall Season Results

Hunters harvested 615 wild turkeys during the 9th fall turkey hunting season. The 2013 fall harvest was only 5 more birds than the 610 taken in the fall of 2012-13. The 57 days of the two archery-only portions of the season accounted for 30% of the harvest with 70% during the 5-12 days of the combined shotgun and archery portion. Shotgun hunters accounted for 59% of the harvest. Weekends accounted for 45% of the total harvest with 34% during the 1-2 weekends of the combined archery and shotgun portions. Juvenile birds made up 26% of the harvest with a juvenile to adult ratio of 1:2.8. The proportion of adults in the fall harvest is still relatively high and likely reflects hunter selection for larger adult birds, and age determination errors. Counties harvesting at least 20 birds ($\geq 3\%$ of the total harvest) were Harrison (30), Crawford (27), Switzerland (25), Jefferson (24), and Warrick (20) (**Figure 3**). The proportion of the fall to spring harvest by county ranged from 0% to 33% and the statewide fall to spring harvest proportion was 5% due to the conservative season structure and relatively low hunter interest that has characterized fall turkey hunting in Indiana since implementation in 2005 (**Figure 4**). **Table 1** provides a more detail summary of Indiana's fall turkey hunting seasons. The newly implemented web-based "Check-IN-Game" harvest reporting system accounted for 62% of the harvest reports.

2014 Spring Season Results

Hunters harvested 10,872 wild turkeys in 88 of the 92 counties (**Figure 5**) during the 45th spring wild turkey hunt based on reports from 367 check stations (57% of the harvest records) with the remaining 43% of the harvest records from the web-based “Check-IN-Game” (42%) and tele-check (1%) systems implemented in 2012. The 2014 harvest was 4% less than the 2013 harvest of 11,374. The majority of the birds was harvested in the early part of the season and the early morning hours. A total of 1,185 birds (11% of total harvest) was taken during the youth-only weekend prior to the regular season. The proportion of juvenile turkeys in the harvest was 17% with 53% 2-yr-olds, and 30% ≥ 3 yr-olds. The northern region, the largest region, supported 25% of the harvest, with 46% of the harvest occurring in the south-central and southeast regions (**Figure 6**). The estimated number of hunters afield was 59,237 in 2014, with an estimated hunter success of 18%, the lowest success rate since 1986. Reasons for the 4% decrease in the total bird harvest in 2014 were likely related to a combination low summer production over the last decade and what appeared to be about a 2 week delay in the breeding chronology this spring following a cooler than normal winter. Annual harvest levels have been fluctuating up and down the last decade around 11,000 to 12,000 birds (**Figure 7**). **Table 2** is a historical summary of Indiana’s spring turkey season parameters.

Crop or Nuisance Issues

Crop depredation complaints in row crops continue to diminish each year. District biologists generally hear crop complaints about turkeys when called out to investigate deer damage. Nuisance complaints are now more common than crop complaints on a year to year basis; most nuisance complaints involve “backyard” situations, wildlife feeding, cars/residences, and sometimes linked to birds of questionable origin (imprinted wild or pen-reared). The primary root cause appears related to “progressive generational acclimation” resulting from the increasing practice of winter feeding for songbirds/deer using mechanical automatic feeders, *aka* “disease inoculation centers”.

Other Chronic or Evolving Issues

Each spring there are complaints from a small group of hunters about season dates being too late. The issue of spring season dates was much less contentious this year. Gobblers were observed displaying in fields into mid-June even in the southern part of the state. Interest in a 2 bird bag in the spring has dropped off almost entirely with almost a decade of relatively poor production.

Research Publications

J. CAUDELL, S.E. BACKS, R. RUDOLPH, T. HOOPER, T. BRYAN, and D. MURPHY. Surveillance of turkey corona virus and other infectious pathogens in Eastern Wild Turkey (*Meleagris gallopavo*) in Indiana. Paper accepted to National Wild Turkey Symposium: 11 (2016): 000-000

Figure 1. Wild Turkey Production - Indiana

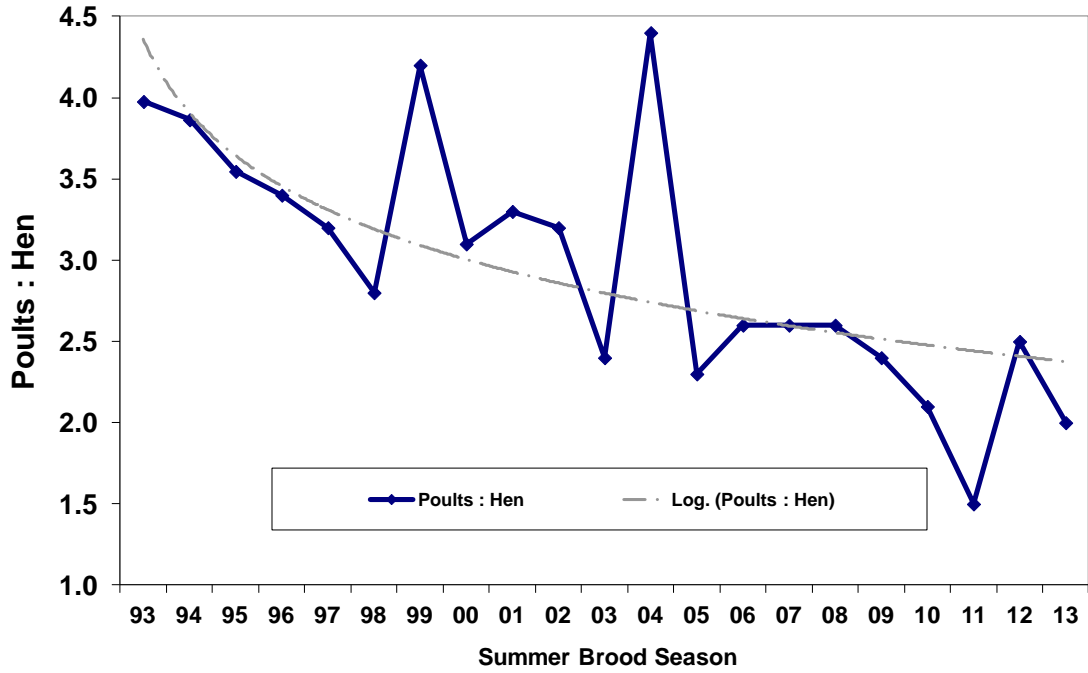


Figure 2. Roadside Gobbling Indices

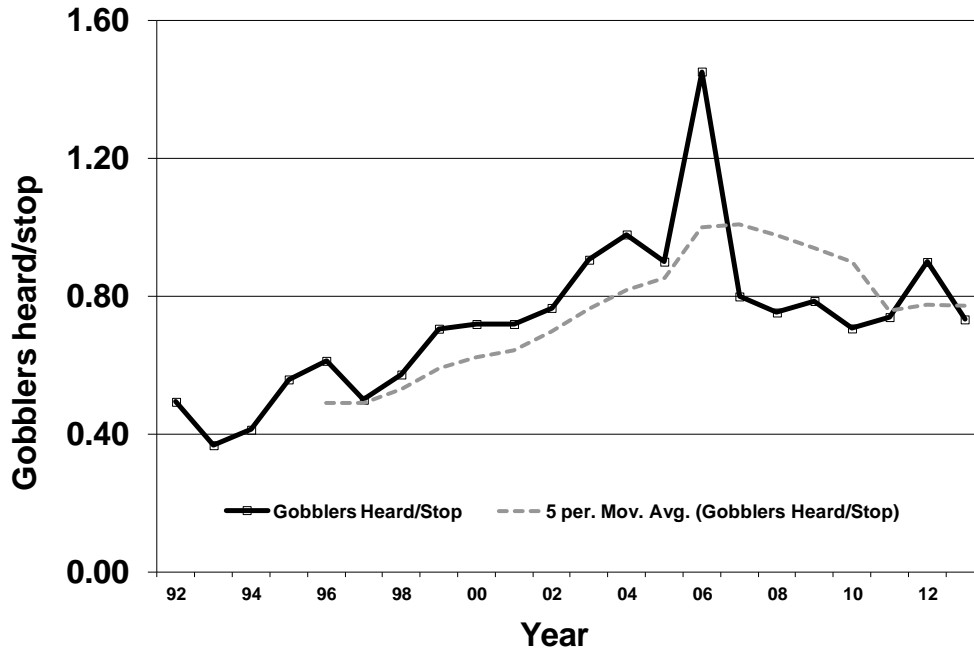


Figure 5. 2014 Spring Turkey Harvest

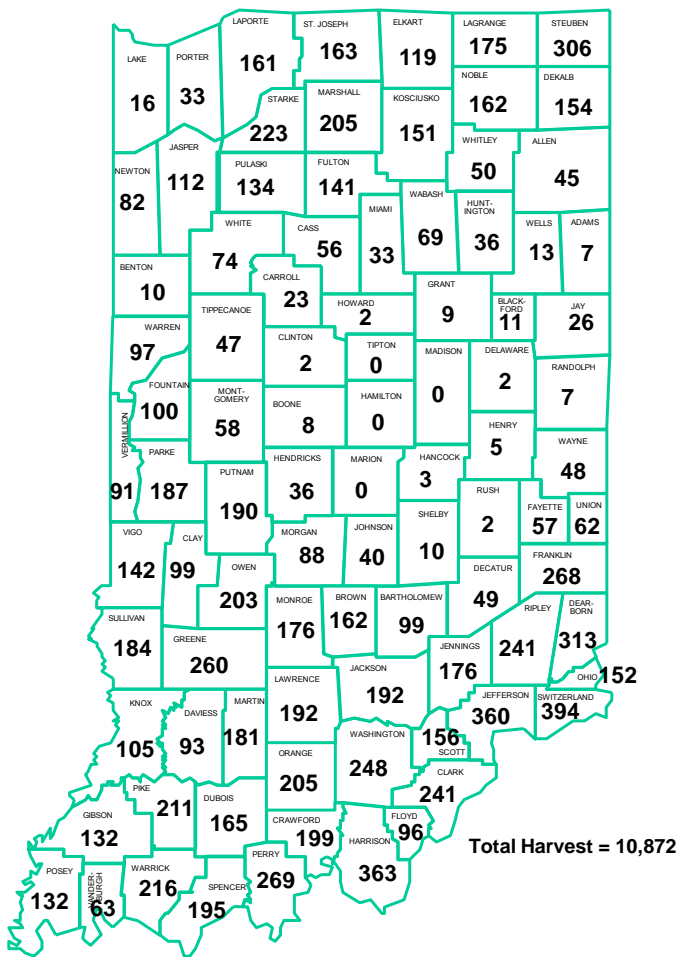


Figure 6. 2014 Spring wild turkey harvest and age structure by region.

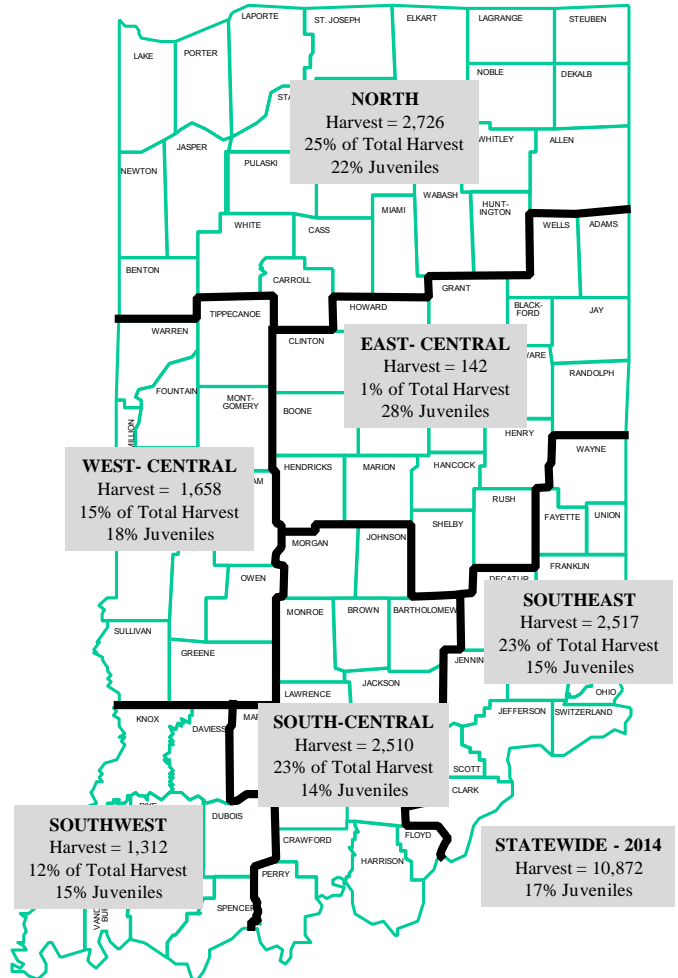


Figure 7. Indiana Spring Turkey Seasons

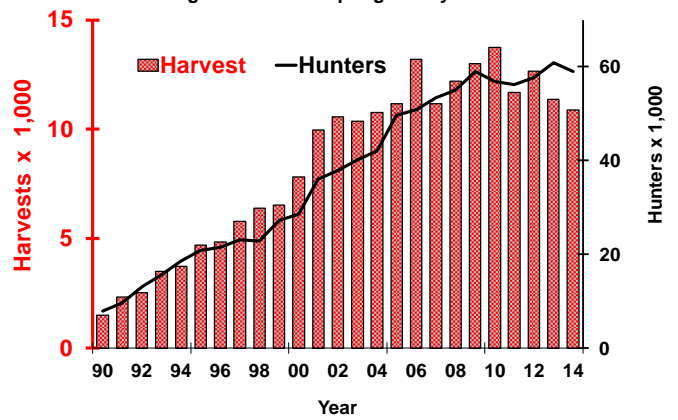


Table 2. Indiana's spring wild turkey hunting seasons, 1970 to 2014.

Year	Regular Season Dates	Season Length (Days)	No. of Counties	No. of Permits Sold*	Est. No. of Hunters**	Reported Harvest	Hunter Success
1970	5/2-5/5	4	3	75	62	6	9.7%
1971	5/1-5/5	5	9	298	224	11	4.9%
1972	4/26-4/30	5	9	585	422	12	2.8%
1973	4/25-4/29	5	11	625	503	27	5.4%
1974	4/24-4/28	5	11	665	496	26	5.2%
1975	4/29-5/5	7	11	722	501	15	3.0%
1976	4/29-5/5	7	13	666	500	32	6.4%
1977	4/28-5/5	8	16	668	520	46	8.8%
1978	4/26-5/7	12	18	852	619	33	5.3%
1979	4/25-5/6	12	19	932	860	48	5.6%
1980	4/23-5/4	12	17	706	670	54	8.1%
1981	4/22-5/3	12	18	922	814	90	11.1%
1982	4/21-5/2	12	18	1,125	696	73	10.5%
1983	4/20-5/1	12	18	1,218	984	93	9.5%
1984	4/25-5/6	12	18	1,320	1,205	104	8.6%
1985	4/24-5/5	12	25	1,882	1,302	255	19.6%
1986	4/23-5/4	12	25	2,523	1,648	293	17.8%
1987	4/22-5/6	15	33	3,348	2,619	741	28.3%
1988	4/27-5/11	15	33	10,894	4,677	905	19.4%
1989	4/26-5/10	15	39	11,442	6,068	1,359	22.4%
1990	4/25-5/9	15	39	14,379	7,860	1,505	19.1%
1991	4/24-5/8	15	43	16,387	9,643	2,318	24.0%
1992	4/22-5/6	15	43	18,735	13,110	2,531	19.3%
1993	4/28-5/16	19	48	21,078	15,673	3,500	22.3%
1994	4/27-5/15	19	48	23,357	18,622	3,741	20.1%
1995	4/26-5/14	19	52	28,858	20,861	4,706	22.6%
1996	4/24-5/12	19	52	28,733	21,442	4,859	22.6%
1997	4/23-5/11	19	74	32,703	23,085	5,790	25.1%
1998	4/22-5/10	19	74	32,889	22,876	6,384	27.9%
1999	4/21-5/9	19	74	38,730	27,285	6,548	24.0%
2000	4/26-5/14	19	74	40,801	28,615	7,822	27%
2001	4/25-5/13	19	74	43,815	36,103	9,975	28%
2002	4/24-5/12 [†]	19	90	44,333	37,919	10,575	28%
2003	4/23-5/11	19	90	48,857	40,110	10,366	26%
2004	4/21-5/9	19	90	50,839	41,996	10,765	26%
2005	4/27-5/15	19	88	50,839	49,684	11,159	22%
2006	4/26-5/14	19	88	67,290	50,880	13,193	26%
2007	4/25-5/13 ^{††}	19	91	69,861	53,402	11,163	21%
2008	4/23-5/11	19	91	71,052	55,022	12,204	22%
2009	4/22-5/10	19	92	75,161	59,000	12,993	22%
2010	4/21-5/9	19	92	73,089	56,891	13,742	24%
2011	4/27-5/15	19	92	72,323	56,220	11,669	21%
2012	4/25-5/13	19	92	71,836	57,631	12,655	22%
2013	4/24-5/12	19	92	74,966	60,889	11,374	19%
2014	4/23-5/11	19	92	73,279	59,237	10,872	18%
2015	4/22-5/10	19	92				

* Includes all allowable license types (e.g., lifetime, youth licenses sold by May, non-residnets, and apprentice).

** No. of hunters includes those permit holders who hunted ≥ 1 day and since 1986, the number of hunters includes an estimate of license exempt landowners or military hunters on active leave participating in the spring season.

[†] "All-day" turkey hunting initiated; 1/2 hr prior to sunrise to sunset.

^{††} Beginning with the spring 2007 season, a special 2-day youth-only season is held the weekend prior to the regular season opening.

Bold italics = preliminary estimates based on projecting previous years' trends or means

IOWA WILD TURKEY STATUS REPORT

Midwest Deer and Turkey Study Group Meeting

Potosi, Missouri September 9th – 12th, 2014

Jim Coffey, Forest Wildlife Research Technician
 IA DNR Chariton Research Station, 24570 US HWY 34, Chariton, IA 50049
james.coffey@dnr.iowa.gov 641-774-2958

STATUS REPORT SUMMARY:

<i>Gun/bow combo licenses</i>	Licenses issued ^a	Harvest totals ^a	% Hunter numbers >1 License	Success rates (per lic.)	Season dates	Licenses fees
Resident Fall 2013	6,040(-9%)	703(-6%)	4%	11.6%	14 Oct – 6 Dec	Hunting fee: \$19.00 Habitat fee: \$13.00 Turkey lic. fee: \$24.50 Total fees: \$56.50
Youth Season (< 16) Spring 2014	5,035(+25%)	1,302 (+25%)	One license/youth	26%	5 Apr - 13 Apr	
Resident - Spring 2014	37,602 (-3%)	8,285 (+6%)	23.4%	22%	14 Apr - 17 Apr 18 Apr - 22 Apr	Hunting fee: \$112.00 Habitat fee: \$13.00 Turkey lic. fee: \$102.00 Total fees: \$227.00
Nonresident Spring 2014	1,901 (-2%) (89% available sold)	750(+9%)	One license/ non-resident	39%	22 Apr - 329 Apr 30 April – 18 May	
<i>Bow only Licenses</i>						
Resident Fall 2013	2,232 (-3%)	123 (-6%)	5%	5.5%	1 Oct – 6 Dec 23 Dec - 10 Jan	Hunting fee: \$19.00 Habitat fee: \$13.00 Turkey lic. fee: \$24.50 Total fees: \$56.50
Resident - Spring 2014	6,421 (-3%)	1060 (+8%)	10%	17%	14 Apr - 18 May	
Totals						
Fall 2013	8,272 (-5%)	703 (-20%)	8%	8.5%		
Spring 2014	50,966 (-3%)	11,401 (+8%)	22.7	22%		

^a parentheses indicates percent change from previous year

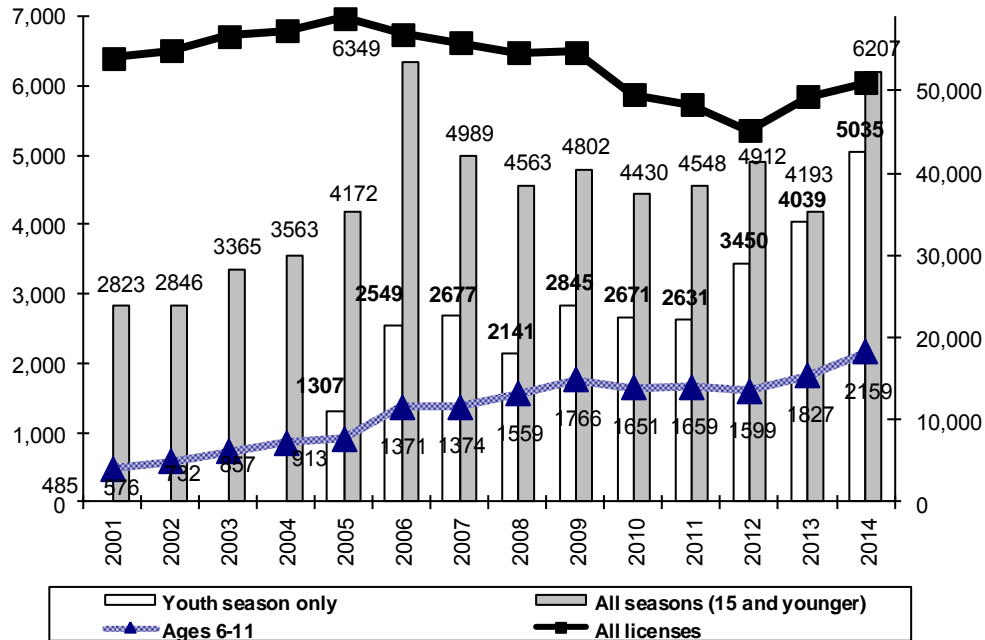


Figure 1. Iowa spring turkey license issue by age, 2001-2014.

YOUTH TURKEY HUNTING

Iowa's 10th youth spring turkey season was held April 5-13, 2014. During the 9 day season, youth 15 and younger were allowed to participate with an accompanied licensed adult (adult licensed for one of the regular seasons). In 2005, the first year of the youth season, ages were limited to ages 12-15. Starting in 2006, ages 15 and younger could participate in the youth season. A total of 5,035 youth purchased licenses for the 2014 season (Fig. 1). Youth season license sales increased (996 more licenses sold) in 2013.

Since the inception of ELSI (Electronic Licensing System of Iowa) in 2001, hunter age and gender has been recorded (Fig. 1). From 2001-2006, youth spring turkey hunters (age 15 and under) increased each year, but have remained similar since. However, youth's using the youth season has increased each year since 2011. The total number of licenses sold has continued to fluctuate each year since 2005 with a slight increase in 2012 and 2014 (Fig. 1). Unfilled youth licenses became valid for any other spring season in 2014.

BOWHUNTER SURVEY:

2013 Bowhunter Observation Survey Iowa Department of Natural Resources

Chris S. Jennelle, Ph.D., Biometrician, Iowa DNR
William R. Clark, Ph.D., Professor, Iowa State University

The Iowa Department of Natural Resources (DNR) solicited responses from bow hunters for the annual Bowhunter Observation Survey from October 1 to December 6, 2013. This was the tenth year of the survey, which was designed jointly with William R. Clark, Professor at Iowa State University. The two primary objectives for this survey are to: 1) provide an independent supplement to other deer data collected by the DNR; and 2) develop a long-term database of selected furbearer data for monitoring and evaluating an index of species activity (rate of species observation). Bowhunters are a logical choice for observational-type surveys because the methods used while bowhunting deer are also ideal for viewing most wildlife species in their natural environment. In addition, bowhunters typically spend a large amount of time in bow stands: more than 40 hours/season is not uncommon. We believe avid bowhunters (defined as those purchasing a license three years in a row prior to the survey year) are the best hunters to select for participation in this survey because they not only hunt often, but they also have the most experience in selecting good stand locations, controlling or masking human scent, using camouflage, identifying animals correctly, and returning surveys. Participants for the 2013 survey were selected either from a core list of avid bowhunters that indicated interest in the survey from 2010, or from a list of avid bowhunters who had purchased a license for each of the 3 years prior to 2013. Our goal was to select approximately 999 bowhunters in each of Iowa's 9 climate regions. Each climate region contains approximately 11 counties, and approximately 91 bowhunters were selected per county in an effort to evenly distribute observations in each region. Selection of participants consisted of a 3-step process. In each county, participants were first randomly selected from a core group of avid bowhunters who had previously indicated an interest in participating in this survey. If fewer than 91 core group participants existed in a county, additional participants were randomly selected from a separate list of avid bowhunters who were not in the core group. Finally, if the number of "core group" and "randomly selected" participants in a county was less than 91, additional avid hunters were selected from other counties in the region to reach the regional goal of 999 participants. A total statewide sample of 8,991 bowhunters was selected for participation. Of surveys mailed, 145 were either returned due to USPS address issues or hunters indicated they did not hunt this year, making the final statewide sample 8846. Responses were obtained from 1,710 bowhunters who recorded their observations during 24,482 hunting trips, yielding 83,411 hours of total observation time (3.41 ± 0.058 hours/trip; mean \pm 95% CL). Bowhunters reported a median of 14 trips during the 67-day season. Regionally, the number of bow hunting trips (and hours hunted) ranged from 1,664 (5,089 hours) in northwest Iowa (Region 1) to 4,023 (13,679 hours) in east central Iowa (Region 6). The raw survey response rate was 19%. Observations were standardized for each of the 12 species to reflect the number of observations per 1,000 hours hunted in each of the 9 regions. In addition, 95% confidence limits were calculated for each estimate.

Precision among estimates for common species, such as deer, wild turkeys, and raccoons, was high: confidence limits were generally within $\pm 15\%$ of the mean estimate. However, for less common species, such as badgers, bobcats, gray fox, and otters, precision was very low and there was considerable uncertainty in the mean estimate. A comparison of results from 2012 and 2013 suggests that the number of total deer observed/1,000 hours decreased across all nine regions of Iowa. Turkey observations (Fig.2) decreased significantly in regions 2 and 3 (and possibly in 6, 7, and 9), while remaining consistent in the rest of Iowa. Bobcat observations/1,000 hours remain low, but stationary across each region of the state. We at the DNR thank all hunters who participated in the 2013 Bowhunter Observation Survey. The volume of information provided by bowhunters could never be duplicated by the staff of biologists, technicians, and conservation officers in the Iowa DNR. Iowa's bowhunters are the best group of hunters to provide this observational information, and their participation in this survey plays a critical role in the conservation of these and other wildlife species for the future.

When looking at the following charts, we caution against making comparisons between regional estimates for any species. Any differences in observation rates between regions could be related to differences in many factors such as population size, habitat, topography, land use, or any other factor affecting the sightability of animals. For each of the selected species, any differences between regions are NOT entirely related to regional differences in population size.

Wild Turkey Observations Per 1,000 Hours Hunted

Bowhunter Observation Survey, Iowa Dept. of Natural Resources

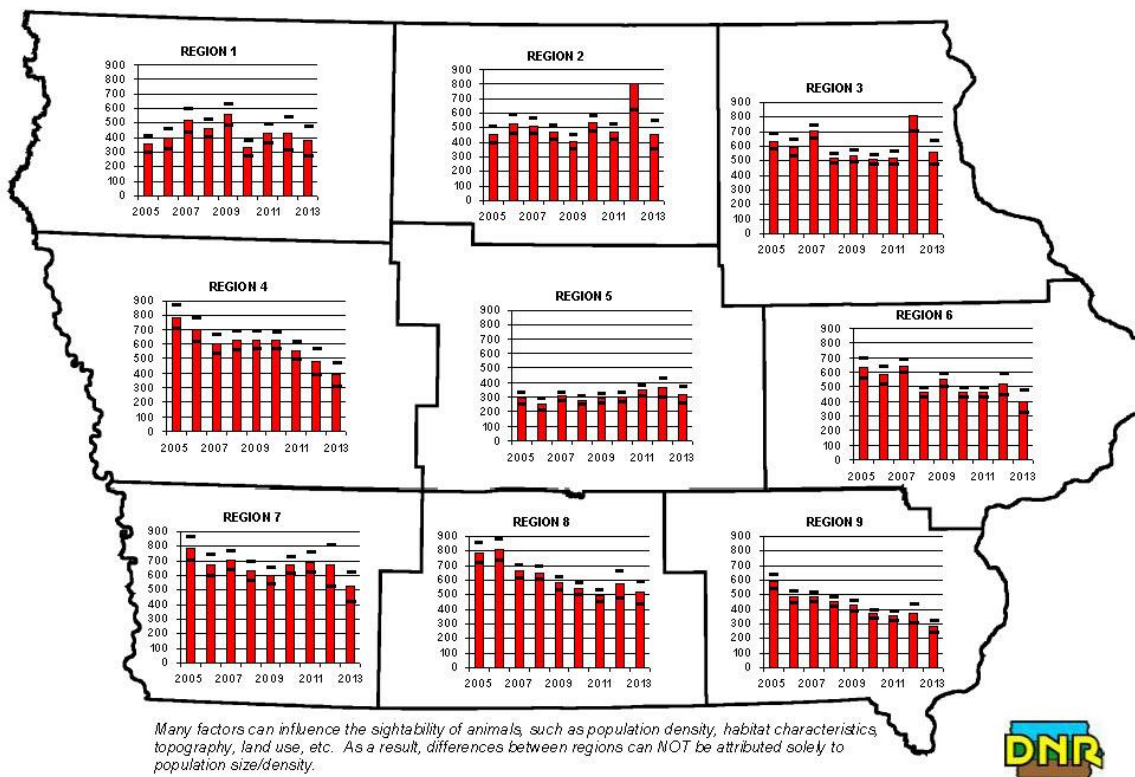


Figure 2. Bowhunter observation survey, wild turkey observations per 1,000 hrs, 2005-2013.

TURKEY BROOD SURVEY

Results from Iowa's 2013 summer wild turkey survey indicated a general statewide decrease in turkey reproduction from the previous year. Statewide, the average number of hens observed (Figure 3) with a brood decreased by 14% (not statistically significant). The average number of poult observed per hen (Figure 3.1) significantly decreased by 26%. Regionally, north central, northeast, east central, and southwest Iowa all experienced a significant decrease in turkey reproduction in nearly all categories. These areas had all experienced a significant increase in reproduction in 2012. All other regions did not experience a significant change either way. Northwest and south central regions were the only regions that showed an increasing trend in reproduction, although not a statistically significant change. The wet weather patterns in the spring and summer of 2013 likely impacted turkey reproduction throughout the state. May rainfall was 200-300% above average throughout most of the state. Northwest Iowa experienced 200-400% increase in rainfall during the month of June. During June, the rest of the state had normal rainfall. Additional rainfall summaries are located at: <http://www.ncdc.noaa.gov/temp-and-precip/maps.php>

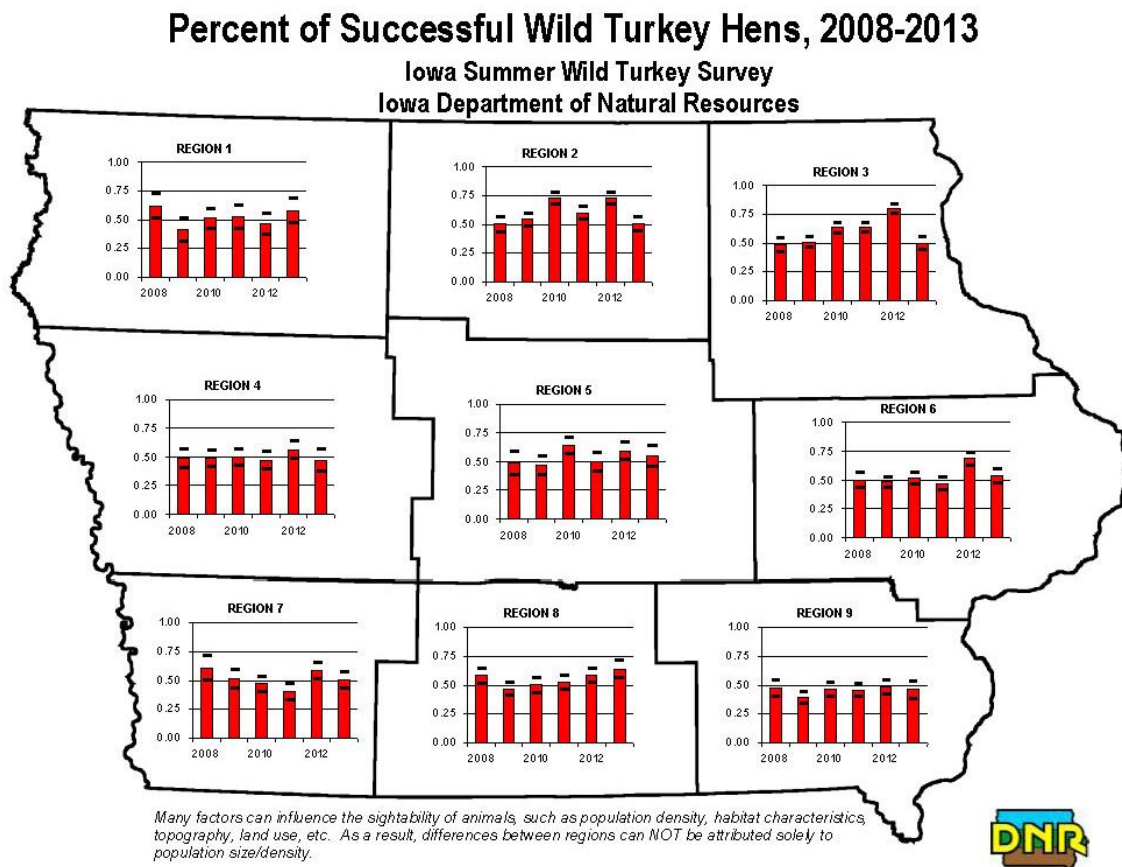


Figure 3. Hens Observed Brood Survey 2013

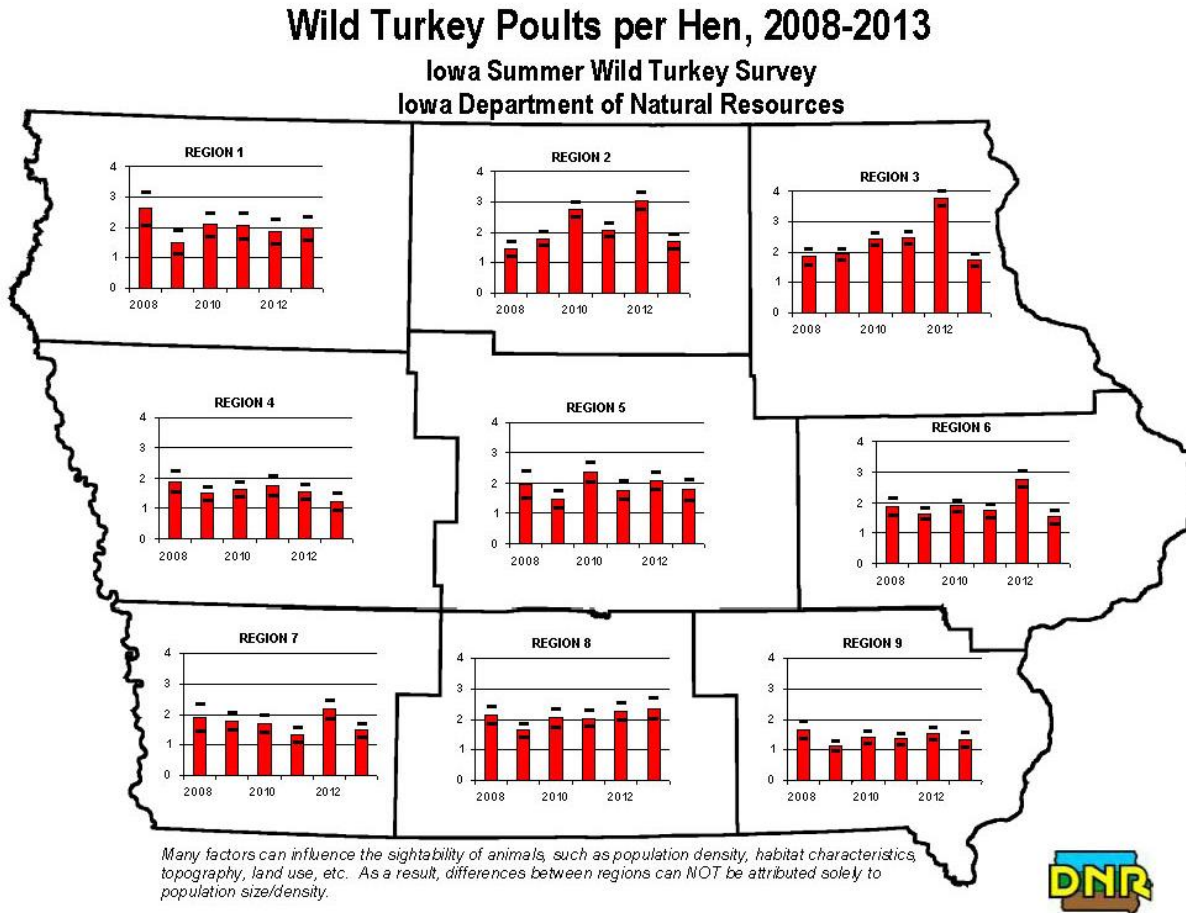


Figure 3.1. Poults per Hen Observed Survey 2013

FALL 2013 HARVEST SURVEY

Fall hunting was allowed in the entire state in 2013, which was the 9th consecutive year (Fig. 4). Fall turkey hunter success rates remained the same in 2013 from 2012 (Fig. 7), but still well below the 2005 and prior estimates due to the change in harvest estimation. In fall of 2006, mandatory harvest reporting required successful hunters to report turkey harvested, and many hunters likely did not report turkeys harvested. Prior to this, harvest totals were estimated using a postcard survey after the seasons closed. Shotgun/bow license issue (paid and free combined) was 6,040 for the 54-day season that ran from 14 October through 6 December 2013. An additional 2,232 archery-only licenses were issued for a season that ran from 1 October through 6 December 2013 and 23 December 2013 through 10 January 2014. Hunter success rates varied from 22% in zone 8 to 7% in Zone 9 (Fig. 4). Archery only licensed hunters reported a harvest of 123 turkeys in 2013 which decreased 7% from the 2012 archery-only license harvest. The 6% success rate for 2013 archery only licenses was similar to the previous year's success rate. Nonresidents have not been permitted to hunt fall turkeys in Iowa since 1990.

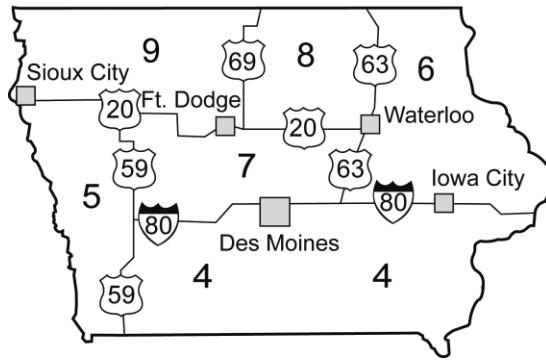


Figure 4. Fall turkey hunting zones in Iowa, 2013.

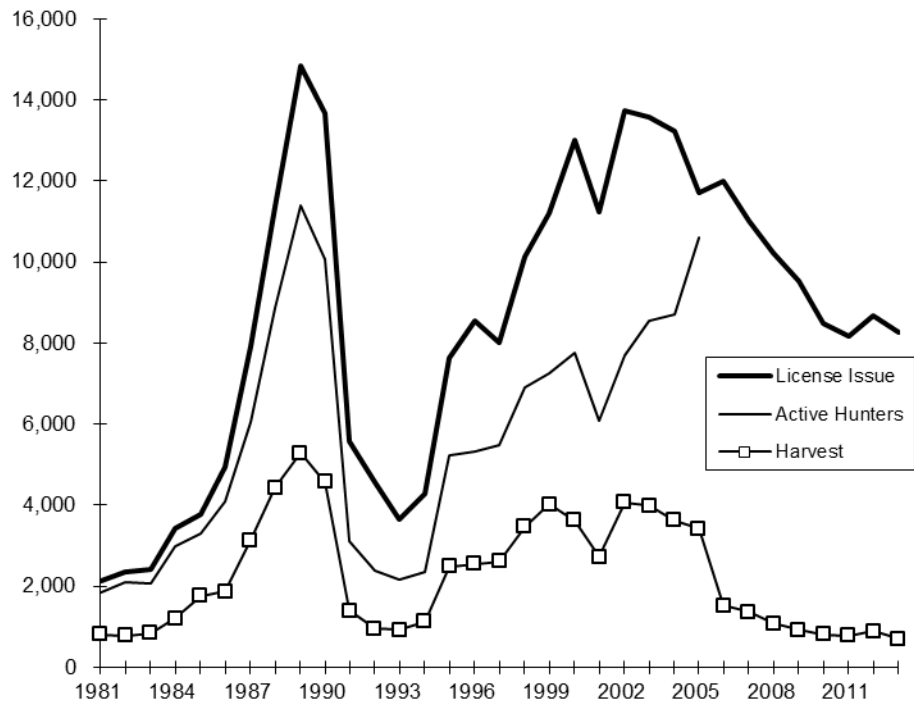


Figure 5. Iowa fall turkey hunting statewide estimates, 1981-2013

SPRING 2014 HARVEST SURVEY

Iowa's 41st modern spring hunting season recorded a decrease in licenses sold (50,966) and an increase in turkeys reported harvested (11,401) in 2014 (Fig. 6). This was the 25th year the entire state was open to spring turkey hunting. The 44-day season (6 April through 19 May, 2014) was partitioned into 5 separate seasons: a 9-day youth-only season, and 4 regular seasons (4, 5, 7, and 19-day seasons). There was an increase in the number of licenses sold (5,035) for the youth-only season with 996 more youth licenses sold than 2013 (Fig.1). The 4-season format, with an unlimited license quota (maximum of 2 licenses per hunter) for all the periods, resulted in 37,541 resident shotgun licenses issued. An additional 6,421 archery-only licenses were issued. Archery-only licenses harvested 1,060 turkeys, resulting in a 16% success rate in 2014.

Twenty-two percent of the resident hunters were successful in harvesting a gobbler in 2014 (Fig. 7). Spring harvest success rates fluctuated around 20-30% during the first 12 years (unweighted average = 25.1 for 1974-85) but success increased each year during 1985-88 (Fig. 7). Declines observed in spring hunter success rates during 1983 and 1984 (Fig. 7) can be partially explained by poor brood production during the summers of 1982 (Fig. 7). Similarly, the decline in hunter success rates between 1988 and 1993 may be explained by 6 years of poor brood production starting in 1988. The success rates from 2002-2006 averaged 46.0%. The decrease in success rates beginning in 2007 and number of turkeys harvested is likely due the change in survey methods. In spring of 2007, mandatory harvest reporting required successful hunters to report turkey harvested. A follow-up post card survey for spring of 2007 revealed 74% compliance rate, which equated to nearly 4,000 harvested turkeys that were not reported initially during the spring season. The major reasons for the non-reports were attributed to hunters forgetting to report (40%), difficulty in reporting process (29%), and unaware of the requirement (22%). This was the 25th spring that non-residents were allowed to hunt turkeys in Iowa. Quotas filled in zone 4 (seasons 2,4), zone 5 (seasons 3,4), Zone 6 (season 4), and Zone 8 (seasons 3,4) in 2014, leaving 330 licenses available. Non-resident hunters harvested 723 turkeys. Non-residents reported more turkeys harvested per hunter than residents in harvesting a spring gobbler (39% versus 22%, respectively). In spring of 2014, known jakes (spurs < ½") harvested were 12% of the total harvest (20% the previous year). Turkeys harvested with spurs ½" – ¾" were 27% (23% in 2013) of the total harvest. The majority (61%) of turkeys harvested had spurs > ¾".

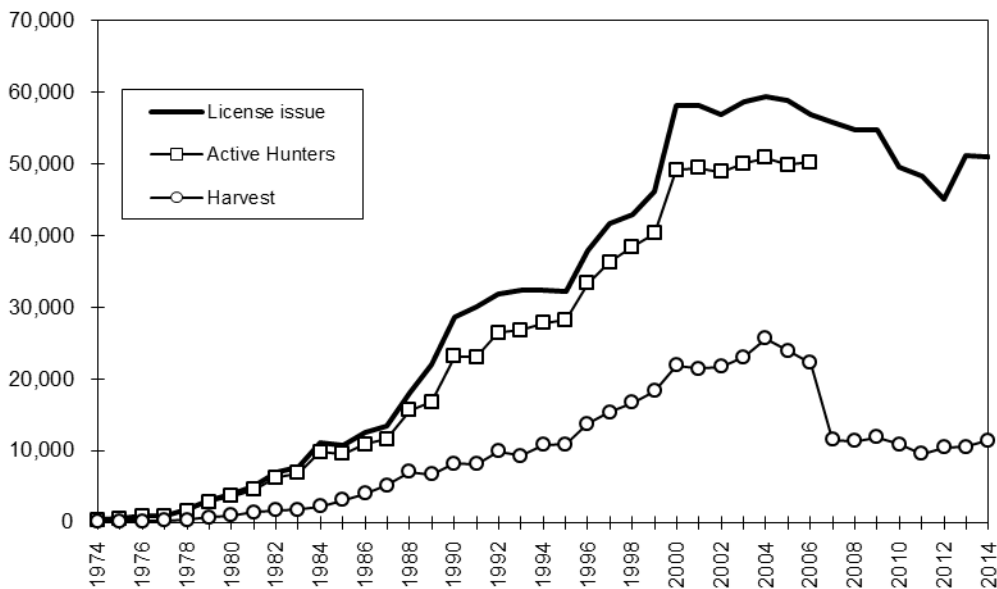


Figure 6. Iowa spring turkey hunting statewide estimates, 1974-2014. Beginning in 2007, the harvest estimates are based on mandatory harvest reporting instead of mail surveys.

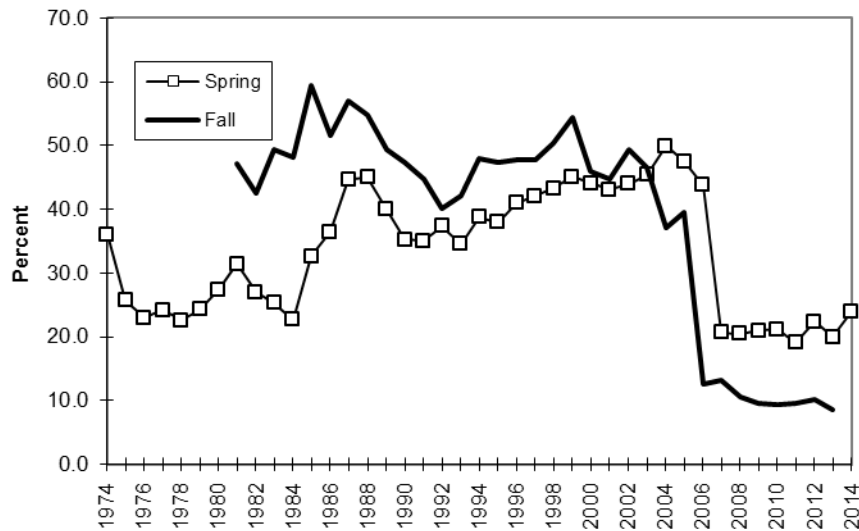


Figure 7. Iowa fall and spring turkey harvest statewide success rates, 1974-2014. Beginning in 2006, survey estimates are based on mandatory harvest reporting instead of mail surveys.

RESTORTATION

Restoration efforts within Iowa ended in 2001, with a total of 3,583 Eastern wild turkeys that have been trapped and released at 265 sites at a stocking rate of approximately 5 adult gobblers and 9 hens per site. Nearly all sites are considered successful. No sites are currently considered to be unsuccessful. Most sites were opened to hunting after populations were established, usually about 5 years post-stocking. Restorations by the IDNR during the last 2 decades have returned wild turkeys to about 95% of the remnant timber stands in the state (Fig. 8).

Eastern turkeys adapted so well to habitat conditions in Iowa that by 1980 the IDNR decided to start trading turkeys for other extirpated wildlife. Since 1980, 7,501 Iowa turkeys have been traded for prairie chickens, ruffed grouse, river otters, habitat monies, and sharp-tailed grouse with 11 states and 1 Canadian province. With restorations complete in Iowa, the focus has shifted to managing the timber resource. As part of the North American Turkey Plan Iowa has designated focal areas across the state for emphasis (Fig. 9). National Wild Turkey Federation dollars will be focused for land acquisition and habitat improvement in these areas.

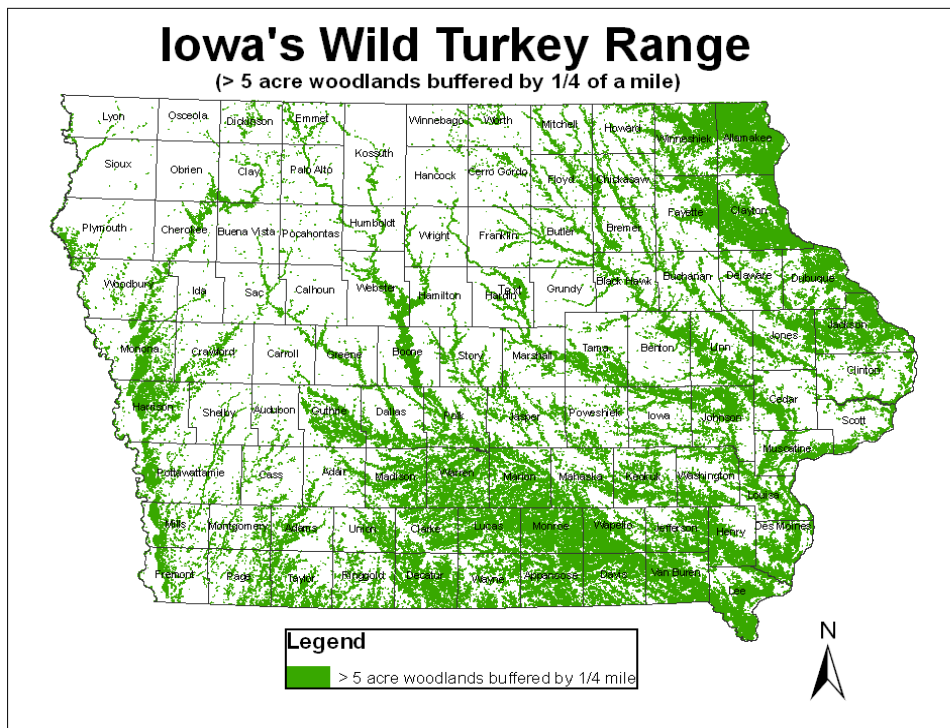


Figure 8. Iowa's wild turkey range (5 acre and greater woodlands buffered by 1/4 mile).

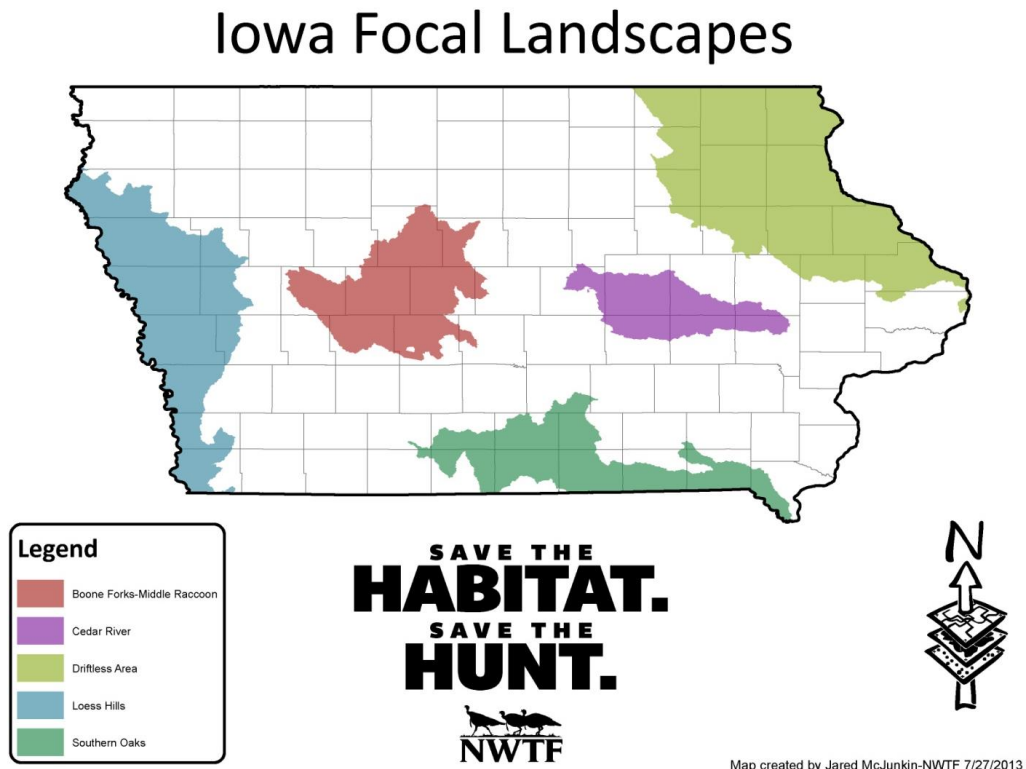


Figure 9. Iowa NWTF focal areas habitat and land acquisition projects.

KANSAS WILD TURKEY UPDATE
MIDWEST DEER & WILD TURKEY STUDY GROUP
POTOSI, MO
SEPTEMBER 9-12, 2014

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Population Trends and Productivity

The rural mail carrier survey (RMCS) has been utilized since 1986 to monitor wild turkey abundance in Kansas. The RMCS is conducted 4 times annually during the 3rd weeks of January, April, July, and the 2nd week of October. During each survey period approximately 400-500 carriers travel 200,000+ miles of Kansas roadway and record observations of wild turkeys and other species. Observations are standardized (obs./100 mi.) to provide an index to the population in the state's 6 turkey management regions (Figure 1). The population has been stable or slightly declining over the last 5 years within each management region (Figure 2).

The Kansas Department of Wildlife, Parks, & Tourism (KDWPT) estimates wild turkey productivity using data collected primarily during the summer RMCS. Since 1987, the carriers have been asked not only to record the number of turkeys observed but to differentiate between young and adults. The Department uses the ratio of young:adult as an index to productivity. The RMCS young:adult ratio indicated that statewide production was 43% above the previous 10-year average during 2014 and 158% higher than the previous year. The indices indicate that production was above the 10-year average in every region of the state except the northwest (Figure 3). The improved production in most regions of the state is likely due to more normal precipitation that the state has enjoyed over the last year. The previous 2 years were among the worst drought years on record for most regions of the state.

Employees of the KDWPT also record observations of pheasant, bobwhite, and turkey broods from the 3rd week of July through the 4th week of August. Turkey observations were not recorded until 2006 and the survey protocol changed in 2012 to a more standardized design. Thus, these data do not yet provide a long-term series of consistently collected poult:hen ratios from which trends can be assessed. The statewide poult:hen ratios were 1.7 and 1.7 for 2013 and 2014, respectively. The regional ratios for 2014 were as follows: Northcentral (1.2), Northeast (1.7), Northwest (1.5), Southcentral (2.5), Southeast (2.6), and Southwest (0.3; low sample size).

Harvest Regulations

The first modern wild turkey season in Kansas was an archery-only spring season in 1974. During that first season a total of 400 permits were issued to residents and landowner/tenants. The season was open for only 9 days and 123 birds were harvested. Kansas now offers some of the most liberal seasons and bag limits in the country. Additionally, there is no minimum age to hunt turkeys in Kansas and hunters that are 15 and younger can hunt without hunter education certification if they are directly supervised by an adult. Hunters that are 12 or older can hunt by themselves during the regular season if they have completed a hunter education course.

The fall 2013 turkey season was open for 112 days across 2 segments in 5 of the 6 turkey hunting units. Hunters pursuing turkeys in Unit 2, 3, 5, and 6 (Figure 3) were also able to purchase 3 either sex game tags in addition to their initial permit. Only the southwestern corner of the state was closed to fall turkey hunting. The 2014 spring turkey season ran for 61 days (including the special seasons) and permits were available over-the-counter for Units 1, 2, 3, 5, and 6 (Table 1). Only 500 spring permits were available to general residents and landowners for Unit 4 (southwest KS) through a pre-season drawing. Any youth (<16) could purchase an over-the-counter permit valid for any unit in the state (including Unit 4). All spring hunters had the option to purchase a second permit called a game tag which was valid in Unit 1, 2, 3, 5, and 6. Additionally, all hunters (resident and non-resident) had the opportunity to purchase a combination license prior to March 31 that contained both spring carcass tags. These combination licenses were sold at a \$7.50 discount over buying both permits individually.

Estimation of Hunter Activity and Harvest

The KDWPT estimates turkey hunter activity and harvest through post-season online questionnaires sent to a stratified sample of hunters that equates to 10% (spring) or 20% (fall) of the people that purchased each permit type. The selected individuals are drawn from the group of people that provide the Department with their e-mail address when purchasing a license (35-40% of total permit holders). The selected individuals are sent an e-mail with a link directing them to an online questionnaire. About one week after the first notification a second e-mail is sent to those individuals who have not yet responded. A third e-mail blast is sent to non-respondents about 2 weeks after the second attempt. To increase response rate, all respondents are entered into a drawing for a framed turkey print and 10 KDWPT magazine subscriptions.

Permit Sales and Harvest Estimates

The KDWPT currently sells spring turkey permits to >41,000 hunters and fall turkey permits to >10,000 hunters (Table 2). Hunters purchased 71,903 carcass tags for the most recent spring season (2014) and 13,720 for the most recent fall season (2013; Table 2). Non-residents account for 33.2% of Kansas' spring hunters and 19.2% of the fall hunters. Harvest has averaged around 33,000 and 3,700 over the last several spring and fall seasons, respectively (Tables 1). The most recent figures indicate that the percentage of hunters harvesting at least one bird was 55% (2014) and 36% (2011) for spring and fall seasons, respectively.

Regulation Changes

Last fall the KDWPPT commission approved 3 staff recommendations for changes to Kansas' turkey regulations. Those changes are as follows:

1. The first change lowered the fall bag limit from 4 to 1 in Units 3, 5, & 6 and will take effect starting with the fall 2014 season. This modification was guided by the KDWPPT harvest management strategy that utilizes resident spring hunt success and the age structure of the spring harvest to trigger regulation changes. That strategy established triggers based on resident spring hunt success and the percentage of jakes in the spring harvest. The triggers for harvest reduction have been hit in the listed units and the recommended bag limits are one notch down on our hierarchy of regulation packages.
2. The second change adjusts the spring season dates starting in spring 2015. The 2015 season will open with a youth/disabled season on April 1 followed by an archery-only season that starts on Monday following the first full weekend in April. The regular spring turkey season will start on the Wednesday following the 2nd full weekend in April and run through May 31. The new season dates will once again give youth/disabled hunters a full weekend without any competition from other hunters and still provide the archers one weekend each year prior to the regular opener. The regular opener will move one week later than the current season structure in 4 of 7 years.
3. Lastly, the commission approved a recommendation to reduce youth big game and turkey permits to \$5 for residents and \$10 for non-residents (plus an additional \$2.50 processing fee). Those changes took effect with the spring 2014 turkey season. The previous fees were \$10 and \$30 for resident and non-resident youth permits, respectively.

Access Programs with Turkey Hunting Opportunities

In addition to publicly owned properties, all Kansas turkey hunters have access to private lands leased for public hunting through the department's Walk-In Hunting Access (WIHA) program. During the fall of 2013, slightly >1 million acres were enrolled; some of which provided fall turkey hunting opportunities. These parcels were open to public access from either 1 September – 31 January or 1 November – 31 January and leased for ~\$2.25/acre. The spring turkey WIHA program is still expanding in the state and enrollment for the spring 2014 season was >214,000 acres. Landowners enrolled in the spring WIHA program received an average of ~\$1.75/acre and allowed access to their property from 1 April – 31 May. The state chapter of the National Wild Turkey Federation (NWTF) again made a contribution to the spring WIHA program from the state superfund. Their NWTF contribution was \$4,500 for the spring 2014 program (\$3,500 for access and \$1,500 for habitat improvement). Approximately 15% of both fall and spring turkey hunters indicated that they pursued turkeys on WIHA at some point during the past year.

The KDWPPT also leases additional private land for limited access special hunts. The program was started to try and acquire more public hunting access near our urban areas. It was believed that landowners near major urban areas would be more willing to enroll their properties in an access program if we limited the number and/or type (e.g. youth) of hunters. The program allows landowners to choose the number of hunter days and/or type of hunters they will allow on their property. The payment rates are adjusted according to the number of hunter days with more

days equaling a greater payment. The spring special hunts program opened >3,700 acres in twelve of the target counties to turkey hunting for spring 2014 which provided >80 hunts.

Trapping and Translocation Efforts

For the most part, turkey stocking efforts have been completed in Kansas. However, the Department still moves birds occasionally to address nuisance complaints. The Departmental turkey committee develops a priority list for translocated turkeys each fall should birds need to be moved. For the winter of 2013-2014 the field staff identified 3 suitable sites for translocations but no birds were moved. The Department did capture 56 male turkeys (37 Adults and 19 Juvelines) in an area where problems regularly occur and released them on-site with leg bands. That was done as an attempt to identify how much harvest pressure that population experiences. Additionally, the Department did capture 50 Eastern X Rio hybrids from one site and sent them to Texas for stocking efforts being conducted by the Texas Parks & Wildlife Department.

Research

No wild turkey research is currently being conducted in Kansas.

Table 1. Kansas wild turkey season dates, total harvest, and hunter success for each of the last 5 seasons, 2010-2014.

Year	Spring			Fall		
	Season Dates	Total Harvest	Success ^a (%)	Season Dates	Total Harvest	Success ^a (%)
2010	Archery-only: Apr. 1-13 Youth/Disabled: Apr. 1-13 Regular: Apr. 14– May 31	34,991	63	Seg. 1: Oct. 1–Nov. 30 Seg. 2: Dec. 13-31 Seg. 3: Jan 10-31 (11)	3,954 (38%)	39
2011	Archery-only: Apr. 1-12 Youth/Disabled: Apr. 1-12 Regular: Apr. 13– May 31	32,298	61	Seg. 1: Oct. 1–Nov. 29 Seg. 2: Dec. 12-31 Seg. 3: Jan 9-31 (12)	3,677 (39%)	36
2012	Archery-only: Apr. 1-10 Youth/Disabled: Apr. 1-10 Regular: Apr. 11 – May 31	31,239	60	Seg. 1: Oct. 1– Nov. 27 Seg. 2: Dec. 10-31 Seg. 3: Jan 14-31 (13)	NA ^c	NA
2013	Archery-only: Apr. 1-19 Youth/Disabled: Apr. 1-19 Regular: Apr. 10 – May 31	33,925	57	Seg. 1: Oct. 1– Dec. 3 Seg. 2: Dec. 16 – Jan. 31 (14)	NA	NA
2014	Archery-only: Apr. 1- 8 Youth/Disabled: Apr. 1- 8 Regular: Apr. 9 – May 31	31,988	55	Seg. 1: Oct. 1– Dec. 2 Seg. 2: Dec. 15 – Jan. 31 (15)	--	--

^a Success was the percentage of active hunters harvesting ≥ 1 bird

^b Percentage of harvest composed of females

^c NA = not available

Table 2. Number of issuances sold for Kansas' spring and fall seasons, 2013-2014.

Permit ^a	Fall (2013-2014)	Spring (2014)
Resident permit (\$22.50) ^b	5,669	16,282
Resident permit/game tag combo (\$27.50)	NA	4,256
Non-resident permit (\$32.50)	1,928	10,899
Non-resident permit/game tag combo (\$47.50)	NA	2,576
Resident Landowner/tenant permit (\$12.50)	1,697	3,991
Resident Landowner/tenant permit/game tag combo (\$17.50)	NA	864
Resident youth permit (\$12.50/\$7.50) ^{c, d, e}	673	3,935
Resident youth permit/game tag combo (\$12.50)	NA	928
Non-resident youth permit (\$12.50)	NA	874
Non-resident youth permit/game tag combo (\$22.50)	NA	203
Non-resident tenant permit (\$12.50)	54	76
Non-resident tenant permit/game tag combo (\$17.50)	NA	31
Resident game tags (\$12.50)	2,914	7,845
Resident youth game tags (\$7.50)	NA	1,189
Non-resident game tags (\$22.50)	785	7,902
Non-resident youth game tags (\$12.50)	NA	476
Total Carcass Tags	13,720	71,903^f

^a Hunters must also buy an annual small game license (resident = \$20.50, non-resident = \$72.50, & non-resident under 16 = \$37.50)

^b The price of all permits includes an agent fee (\$1.00) and processing fee (\$1.50).

^c Individuals ≤ 16 are considered youth.

^d Non-resident youth had to purchase a regular price non-resident permit.

^e Price reduced starting with the spring 2014 season.

^f The total number of carcass tags does not equal the sum of the issuances because the combinations include two carcass tags.

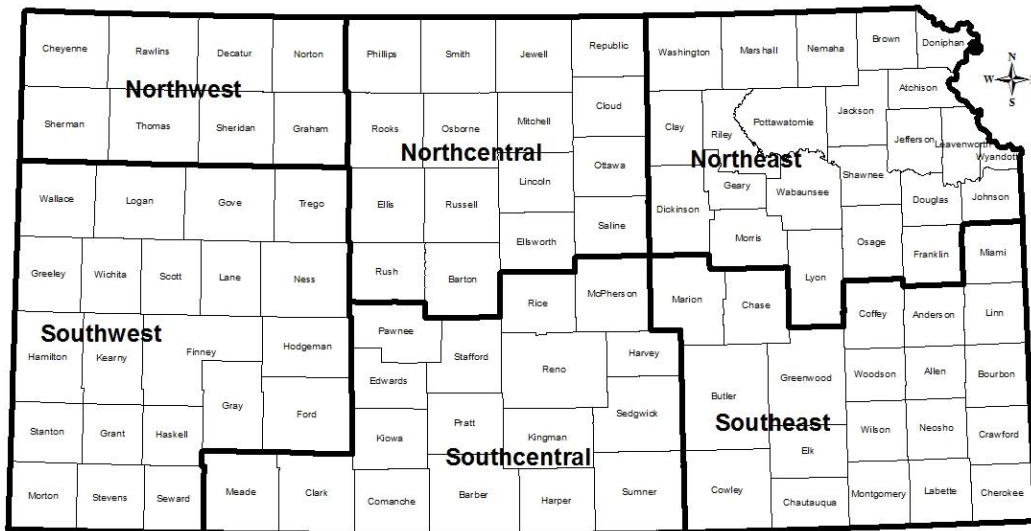


Figure 1. The 6 wild turkey management regions of Kansas, 2013-2014.

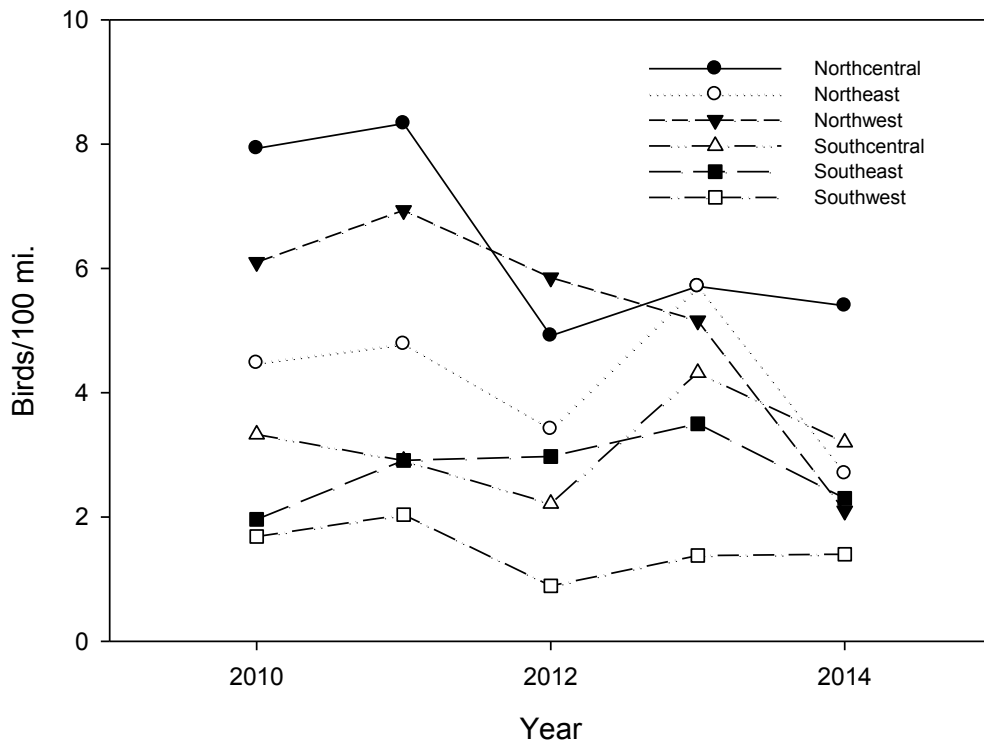


Figure 2. The spring rural mail carrier index (birds/100 mi. traveled) to wild turkey populations in the 6 Kansas management regions, 2010-2014.

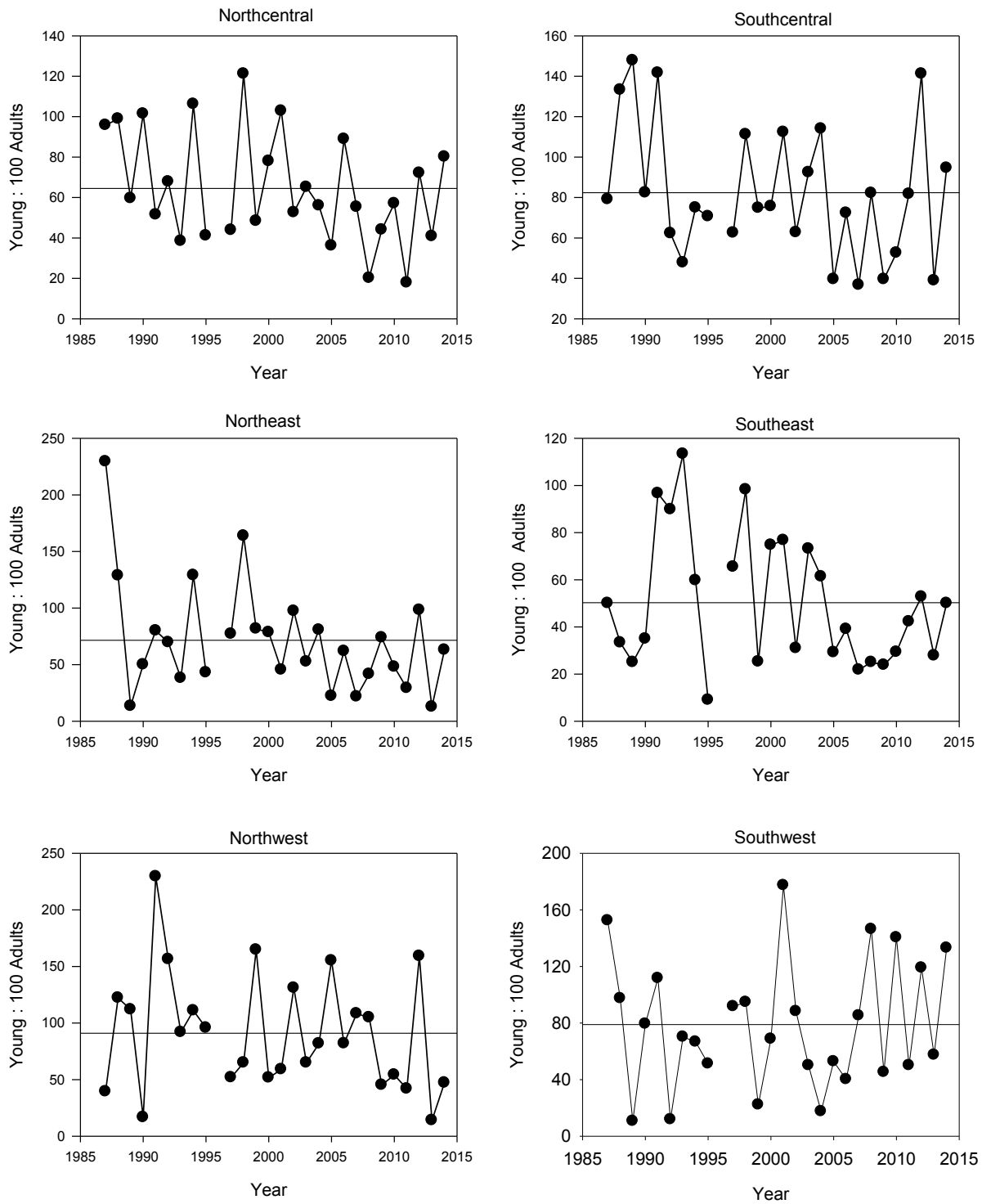


Figure 3. Wild turkey production indices (young : 100 adults) for the 6 Kansas turkey management regions, 1986-2014. The long-term mean production index is depicted as a solid line.

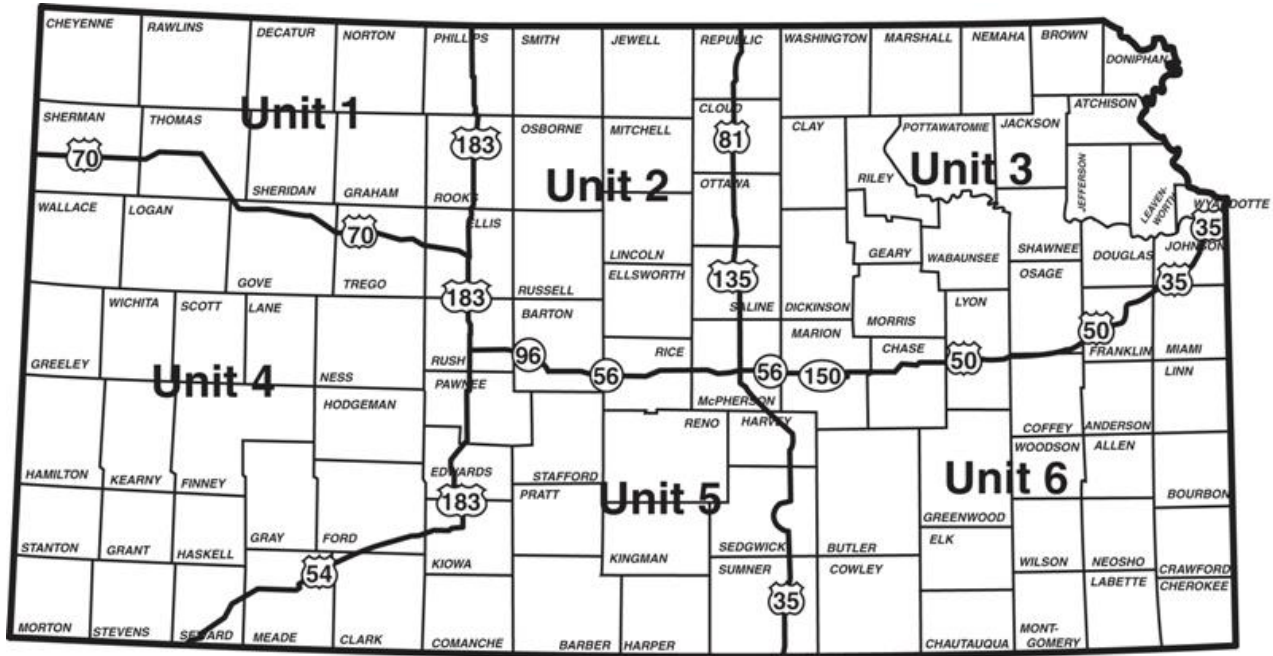


Figure 4. The map depicts the hunting units for Kansas' spring and fall 2014 turkey seasons. A spring turkey permit could be purchased over-the-counter for Units 1, 2, 3, 5, and 6. Five hundred spring permits were issued to residents for Unit 4 through a pre-season drawing and they were also valid in adjacent units. An additional spring game tag could be purchased over-the-counter and was valid in Units 1, 2, 3, 5, and 6. A fall turkey permit can be purchased over-the-counter for Units 1, 2, 3, 5, and 6. Up to 3 additional fall turkey game tags can be purchased and will be valid only in Unit 2. There will be now fall turkey hunting authorized for Unit 4.



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2013 MICHIGAN SPRING TURKEY HUNTER SURVEY

Brian J. Frawley

ABSTRACT

A survey of turkey hunters was conducted following the 2013 spring hunting season to determine turkey harvest and hunter participation. In 2013, about 82,621 hunters harvested about 31,931 turkeys. Statewide, 39% of hunters harvested a turkey. Nearly 68% of the hunters rated their hunting experience as excellent, very good, or good in 2013. About 90% of the hunters reported they experienced no or only minor interference from other hunters. The number of hunters, their hunting effort, harvest, and hunter success were not significantly different between 2012 and 2013. However, hunter satisfaction in 2013 increased significantly from 2012 (68% versus 65%).

INTRODUCTION

Michigan's spring turkey (*Meleagris gallopavo*) hunting season was based originally on an area and quota system. This system was set up primarily to distribute hunters across geographic areas (management units) and time (hunt periods). As the turkey population has expanded statewide, license types were created that allowed hunters to hunt in multiple management units. The goal of the current system has been to provide hunting opportunities while maintaining acceptable levels of hunter satisfaction (Luukkonen 1998).

In 2013, nearly the entire state was open for wild turkey hunting from April 22 through May 31 (Figure 1). The area open for turkey hunting (58,114 square miles) was the same as last year. The statewide hunting area was divided into 12 management units (Figure 1). Hunting licenses were available on these management units for three types of hunts: (1) quota [limited licenses available] hunts on both public and private lands in a specific management unit, (2) quota hunt on private lands in southern Michigan [Hunt 301 in Unit ZZ], and (3) a guaranteed hunt (no quota) that included all units [Hunt 234], but excluded public lands in the Southern Lower Peninsula (SLP).



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IC2042-500 (01/07/2014)

People interested in obtaining a turkey hunting license could enter into a random drawing (lottery) conducted by the Department of Natural Resources (DNR) or purchase a license for Hunt 234 between January 1 and May 1 without going through the lottery. Each applicant in the lottery could select up to two hunt choices (any combination of quota and unlimited quota hunts). The lottery consisted of two drawings. The first drawing was used to select applicants based on their preferred hunt choice. The second drawing was among applicants who were not successful in the first drawing, and was based on the hunter's second choice for a hunt. Any licenses available after the drawing was completed were made available on a first-come, first-served basis to applicants that were unsuccessful in the drawing. Unsuccessful applicants could purchase one leftover license or a license for Hunt 234. Beginning one week after licenses were available to unsuccessful applicants, all remaining licenses except licenses for Hunt 234 were made available to nonapplicants. After May 1, Hunt 234 was available for purchase only to applicants. Hunters were allowed to purchase one license and take one bearded turkey with the harvest tag issued with their license.

A limited number of licenses were available for quota hunts, and they were valid only in a certain management unit and only during a limited time period (7-40 days). Most quota hunts began before May 6 and lasted for seven days. A private land management unit (Unit ZZ) was created in 2002 that included all private lands in southern Michigan (Figure 1). Hunters who selected Hunt 301 could hunt the first two weeks of the season (April 22-May 5) anywhere on private lands in Unit ZZ. This unit and hunt period was created to provide additional hunting opportunity and increased flexibility for hunters who had difficulty finding time to hunt during shorter quota hunts.

Licenses for Hunt 234 could be used in any management unit. They were valid on public and private lands, except in Unit ZZ, where they were only valid on private lands or on Fort Custer military lands. Hunt 234 started later than most quota hunts but lasted for 26 days (May 6-31). An unlimited number of licenses were available for Hunt 234.

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2012. Individuals could purchase an unlimited number of applications for the PMH. Three individuals were randomly chosen from all applications, and winners received elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The turkey hunting licenses were valid for all areas open for hunting turkey and during all turkey hunting periods. Furthermore, the PMH license holder could hunt any season until their turkey harvest tag was filled.

A mentored youth hunting program started in 2012. Under this program, a mentored youth hunting license was created and could be purchased by youth hunters aged 9 and younger. The youth hunter had to participate with a mentor who was at least 21 years old. The mentored youth hunting license allowed the youth hunter to hunt small game, turkey, deer, trap furbearers, and fish for all species. A turkey kill tag issued under the mentored youth hunting license was valid for one turkey during any hunt period, in any open hunt unit, on private or public land. No application was required to purchase the mentored youth license.

Hunters could use a bow and arrow, crossbow, or shotgun with number 4 or smaller shot (including a muzzleloading shotgun) to hunt turkeys. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNR-issued crossbow permit, did not need the stamp.

The DNR and the Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are a management tool used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are the primary objectives of this survey.

METHODS

The Wildlife Division provided all hunters the option to report voluntarily information about their turkey hunting activity via the internet. This option was advertised in the hunting regulation booklet and through a statewide news release. Hunters could report information anytime during the hunting season. Hunters reported whether they hunted, the days spent afield, whether they harvested a turkey, type of device used while hunting (i.e., firearm, crossbow, or bow and arrow), and whether other hunters caused interference during their hunt (none, minor, some irritation, or major problem). Successful hunters were also asked to report where their turkeys were taken (public or private land), date of harvest, and beard length of the harvested bird. Birds with a beard less than six inches were classified as juveniles (one year old), while birds with longer beards were adults (two years old or greater; Kelly, 1975). Finally, hunters were asked to rate their overall hunting experience (excellent, very good, good, fair, or poor), and indicate the status of the turkey population in their hunting area (increasing, decreasing, stable, or unknown).

Following the 2013 spring turkey hunting season, a questionnaire was sent to 13,937 randomly selected people that had purchased a turkey hunting license (resident turkey, senior resident turkey, nonresident turkey, mentored youth, and Pure Michigan hunting licenses) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire were asked to report the same information that was collected from hunters that reported voluntarily on the internet.

Estimates were calculated using a stratified random sampling design that included 17 strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (12 management units). Hunters who purchased a license that could be used in multiple management units (mentored youth hunters, PMH license holders, and licenses for hunts 234 and 301) were treated as separate strata (strata 13-16). Moreover, people that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (seventh stratum).

A 95% confidence limit (CL) was calculated for each estimate. This CL could be added to and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval was a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Estimates were

based on information collected from random samples of hunting license buyers. Thus, these estimates were subject to sampling errors (Cochran 1977). Estimates were not adjusted for possible response or nonresponse biases.

Statistical tests are used routinely to determine the likelihood that differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during early July 2013, and nonrespondents were mailed up to two follow-up questionnaires. Although 13,937 people were sent the questionnaire, 203 surveys were undeliverable resulting in an adjusted sample size of 13,734. Questionnaires were returned by 8,343 people, yielding a 61% adjusted response rate. In addition, 2,196 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS AND DISCUSSION

In 2013, licenses were purchased by 104,279 people, an increase of nearly 2% from 2012 (Table 1). Most of the people buying a license were males (92%), and the average age of the license buyers was 44 years (Figure 2). Nearly 12% (12,656) of the license buyers were younger than 17 years old. Mentored youth hunting licenses were purchased by 2,711 youths.

The number of people buying a turkey hunting license in 2013 decreased by about 3% in ten years from 2003 (107,866 people purchased a license in 2003). There were fewer license buyers for age classes between 25 and 50 years of age in 2013, compared to 2003 (Figure 3). However, there were increased hunter numbers among the youngest and oldest age classes in 2013. The increased hunter numbers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased. The increased participation among the youngest hunters reflected the lowering of the minimum age requirements. In 2013, there was no minimum age limit to hunt turkeys; while hunters had to be at least 12 years old to participate in 2003.

About 79% ($\pm 1\%$) of license buyers hunted turkeys (82,621 hunters). Most of these hunters were males ($76,360 \pm 1,009$), although nearly 8% ($\pm 1\%$) of the hunters were females ($6,261 \pm 532$). Estimated hunter numbers (Table 2) were similar in 2012 and 2013 (82,297 versus 82,621 hunters). Counties listed in descending order with more than 2,200 hunters afield included Allegan, Kent, Newaygo, Montcalm, Jackson, and Sanilac (Table 3).

Hunters spent an estimated 341,113 days afield pursuing turkeys (4.1 ± 0.1 days/hunter), and harvested approximately 31,931 birds (Figure 4). Counties listed in descending order with hunters taking more than 900 turkeys included Kent, Montcalm, Ottawa, and Jackson (Table 3). Hunter effort and harvest in 2013 were not

significantly different from 2012. Hunter success was 39% in 2013, which was not significantly different from the 38% hunter success experienced in 2012.

About 25% ($\pm 2\%$) of the harvested birds were juvenile males ($8,108 \pm 604$); 73% ($\pm 2\%$) were adult males ($23,334 \pm 935$), and about 1% were bearded females (291 ± 112). Additionally, the age of a small number of harvested birds ($<1\%$) was unknown (199 ± 107) because hunters failed to report a beard length.

Hunting effort and the number of turkeys harvested were generally highest during the earliest hunting periods (Figures 5-8). For turkeys that the harvest date was known, 44% of these birds were taken during the first seven days (April 22-28). Daily hunter success generally was more than 8% during April 22 through May 9. Daily hunter success was generally below 8% during May 10-31. Hunting effort and harvest generally was greater on the weekends than weekdays.

About 86% of turkey hunters hunted solely on private land; 8% hunted on public land only; and 5% hunted on both private and public lands (Table 4). Of the 31,931 turkeys harvested in 2013, $90 \pm 1\%$ were taken on private land ($28,572 \pm 993$ birds). About $10 \pm 1\%$ of the harvest ($3,285 \pm 384$ birds) was taken on public land.

Seventeen percent of turkey hunters believed turkey numbers were increasing in their hunting area (Table 5); while, 43% thought turkey numbers were stable, 23% thought turkey were decreasing; 17% of turkey hunters were uncertain about the status of turkeys; and 1% did not comment on the status of turkey.

Hunter satisfaction is one measure used to assess the turkey management program in Michigan. Of the estimated 82,621 people hunting turkeys in 2013, $68 \pm 1\%$ of the hunters rated their hunting experience as either excellent ($16,178 \pm 806$ hunters), very good ($17,424 \pm 839$), or good ($22,933 \pm 943$) (Table 6). Nearly $18 \pm 1\%$ of the hunters rated their experience as fair ($15,140 \pm 818$ hunters). Only $12 \pm 1\%$ of the hunters rated their experience as poor ($10,023 \pm 684$ hunters). About 1% of the hunters (924 ± 219 hunters) failed to rate their hunting experience.

Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Luukkonen 1998). In 2013, $71 \pm 1\%$ of the hunters reported no hunter interference; $19 \pm 1\%$ reported minor interference; $7 \pm 1\%$ reported some irritation caused by hunter interference; and $2 \pm 1\%$ reported hunter interference was a major problem (Table 7).

Although interference can affect hunter satisfaction, hunter satisfaction was more closely associated with hunter success (Figures 9 and 10). Hunter success was greatest for hunts beginning April 22; however, satisfaction varied little among the hunt periods (Table 8).

Compared to 2012, hunter numbers, hunter effort, and harvest statewide in 2013 were not significantly different (Table 9). In addition, hunter success and the proportion of hunters that indicated they experienced no or only minor interference with another

hunter were similar in both 2012 and 2013 (Table 10). However, statewide hunter satisfaction increased significantly in 2013.

Most hunters ($91 \pm 1\%$) used firearms while hunting turkeys, although $7 \pm 1\%$ of the hunters used archery equipment (compound, recurve, or long bows), and $5 \pm 1\%$ used a crossbow. Most hunters ($94 \pm 1\%$) used a firearm to harvest their turkeys, while $3 \pm 1\%$ used archery equipment, and $3 \pm 1\%$ used a crossbow. About 39% of hunters using a firearm harvested a turkey, while 22% of hunters using a crossbow took a turkey, and 18% of hunters using another type of bow (longbows, recurve, or compound bows) took a turkey (Table 11).

Hunters using a crossbow to hunt turkeys were required to obtain a crossbow stamp, unless they were a disabled hunter that already had a DNR-issued crossbow permit. About $37 \pm 5\%$ of the turkey hunters using a crossbow had obtained the crossbow stamp.

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Table 1. Number of hunting licenses available and people applying for licenses during the 2013 Michigan spring turkey hunting season.

Management unit or hunt period	Licenses available (quota)	Number of eligible applicants ^a	Number of applicants successful in drawing	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants ^b	Number of licenses purchased by unsuccessful applicants ^b	Number of licenses purchased by people not in the drawing ^b	Number of licensees ^b
A	5,500	1,747	1,762	3,738	1,266	2	973	2,241
E	1,700	1,834	1,700	0	1,226	6	2	1,234
F	5,000	3,156	3,153	1,847	2,335	2	530	2,867
J	4,000	1,558	1,587	2,413	1,189	0	692	1,881
K	8,500	8,866	8,383	117	6,275	25	86	6,386
M	8,000	1,039	1,050	6,950	784	0	3,730	4,514
ZA	4,800	1,853	1,883	2,917	1,411	1	1,612	3,024
ZB	1,750	922	893	857	666	3	517	1,186
ZC	2,400	1,329	1,298	1,102	927	3	827	1,757
ZD	40	77	40	0	19	0	0	19
ZE	2,000	1,737	1,450	550	1,036	45	406	1,487
ZF	5,600	1,923	1,947	3,653	1,489	2	2,504	3,995
Hunt 234	NA	318	480	NA	965	128	39,574	40,667
Hunt 301	65,000	7,772	7,859	57,141	6,575	82	23,661	30,318
Pure MI Hunts	3	NA	NA	NA	NA	NA	NA	3
Mentored Hunts	NA	NA	NA	NA	NA	NA	NA	2,700
Statewide	114,293	34,131	33,485	81,285	26,163	299	75,114	104,279

^aNumber of eligible applicants selecting the management unit as their first choice to hunt.

^bIf a licensee purchased more than one license, only the latest purchase is included in the summary of licenses purchased.

Table 2. Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2013 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)												
A	1,963	91	7,615	675	627	121	32	6	52	6	94	3
E	1,113	43	3,543	268	411	66	37	6	65	6	93	3
F	2,504	110	8,586	624	559	127	22	5	55	6	89	4
J	1,583	85	5,521	480	537	103	34	6	68	6	91	4
K	5,566	254	18,670	1,560	1,977	343	36	6	56	6	88	4
M	3,422	242	17,401	2,479	1,050	236	31	7	55	7	91	4
ZA	2,517	141	8,659	1,002	877	169	35	6	72	6	89	4
ZB	1,014	54	3,625	414	341	68	34	6	70	6	86	5
ZC	1,305	102	4,900	671	434	99	33	7	68	7	81	6
ZD	18	1	96	17	2	1	13	5	50	8	81	6
ZE	1,246	70	4,102	430	498	89	40	7	79	6	84	5
ZF	3,128	212	14,353	2,072	1,088	225	35	7	70	7	88	5
Pure MI Hunt	3	0	6	0	3	0	100	0	100	0	100	0
Subtotal	25,382	486	97,077	3,978	8,406	566	33	2	63	2	89	1
Hunt period 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2013)												
ZA	6,562	474	23,325	2,129	3,044	343	46	4	79	3	91	2
ZB	2,722	329	10,633	1,663	1,255	228	46	6	77	5	88	4
ZC	4,038	391	15,398	1,884	1,885	276	47	5	75	5	88	3
ZD	409	133	1,529	615	168	85	41	16	88	11	90	10
ZE	6,630	475	23,973	2,222	3,051	343	46	4	73	4	90	2
ZF	5,878	455	23,664	2,318	2,867	335	49	4	74	4	90	3
Unknown	570	158	2,444	892	64	53	11	9	53	14	89	9
Subtotal	26,268	395	100,965	3,298	12,335	564	47	2	75	2	90	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 2 (continued). Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2013 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95%	Total	95%	Total	95%	%	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2013)												
A	538	171	2,555	1,006	117	79	22	13	40	16	88	10
E	1,479	281	5,723	1,464	507	165	34	9	64	9	95	4
F	1,789	308	8,690	1,953	357	140	20	7	49	9	94	4
J	969	227	4,239	1,362	366	140	38	11	64	11	92	7
K	6,344	545	29,472	3,507	2,042	326	32	4	64	5	90	3
M	269	119	1,470	1,005	87	67	32	21	50	22	100	0
ZA	5,482	513	24,223	3,090	2,245	342	41	5	71	5	92	3
ZB	1,754	307	7,555	1,687	707	197	40	9	68	8	94	4
ZC	2,284	345	10,315	2,009	660	188	29	7	73	7	96	3
ZD	241	115	1,070	600	111	79	46	24	87	16	93	12
ZE	4,340	462	17,939	2,444	1,911	315	44	6	75	5	92	3
ZF	4,259	461	20,478	3,164	1,403	272	33	5	71	5	91	3
Unknown	602	183	2,305	1,109	95	73	13	10	37	15	76	13
Subtotal	28,985	684	136,034	6,058	10,608	657	37	2	67	2	92	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 2 (continued). Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2013 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)												
A	41	15	87	37	8	7	19	15	69	18	94	9
E	74	21	288	121	8	7	10	9	76	12	90	9
F	51	17	148	59	15	10	30	16	85	12	85	12
J	60	18	245	94	14	9	23	13	83	12	96	6
K	301	40	949	153	64	19	21	6	73	6	93	4
M	79	21	293	106	18	10	23	11	68	13	94	7
ZA	407	45	1,366	206	140	28	34	6	76	5	91	3
ZB	162	30	536	128	49	17	31	9	81	8	97	3
ZC	280	39	875	151	78	21	28	6	82	6	88	5
ZD	20	11	64	39	3	4	13	18	63	26	100	0
ZE	297	40	1,021	184	98	24	33	7	83	5	91	4
ZF	299	40	1,131	204	86	22	29	6	80	6	94	3
Unknown	20	11	36	26	3	4	13	18	38	26	63	26
Subtotal	1,986	56	7,037	373	583	52	29	2	78	2	92	2
Statewide	82,621	929	341,113	7,972	31,931	1,036	39	1	68	1	90	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3. Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2013 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95%	Total	95%	Total	95%	%	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Alcona	999	193	3,641	883	237	94	24	8	52	10	90	6
Alger	139	90	959	732	78	71	56	32	73	27	96	4
Allegan	2,764	366	11,949	2,226	893	215	32	7	69	6	87	5
Alpena	671	148	2,721	811	237	91	35	11	46	12	94	7
Antrim	648	146	2,349	673	253	95	39	12	72	11	94	6
Arenac	513	132	1,490	466	205	79	40	13	64	13	94	6
Baraga	20	37	7	0	1	0	5	9	100	0	100	0
Barry	2,048	318	9,583	2,052	615	174	30	7	71	7	89	5
Bay	560	164	2,227	803	214	102	38	14	57	15	84	11
Benzie	424	171	1,091	481	168	112	40	20	80	17	88	15
Berrien	1,083	233	4,409	1,294	450	147	42	11	72	10	96	4
Branch	823	192	3,398	968	365	128	44	12	78	10	89	7
Calhoun	1,739	286	5,974	1,271	880	201	51	8	76	7	86	6
Cass	905	208	4,771	1,606	289	113	32	11	73	10	89	7
Charlevoix	518	139	1,717	710	215	91	41	14	64	13	86	10
Cheboygan	431	114	1,716	521	121	60	28	12	60	14	86	10
Chippewa	237	125	961	670	61	64	26	24	42	27	100	0
Clare	1,091	198	4,027	979	323	112	30	9	62	9	92	5
Clinton	1,341	249	4,510	1,056	428	140	32	9	70	9	87	6
Crawford	666	164	2,748	848	142	79	21	10	54	13	91	7
Delta	705	204	2,943	1,163	254	126	36	15	56	15	92	9

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2013 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95%	Total	95%	Total	95%	%	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Dickinson	545	182	2,442	1,282	124	90	23	15	50	18	86	13
Eaton	1,254	244	4,477	1,080	537	161	43	10	75	9	97	3
Emmet	362	115	1,247	574	156	78	43	16	89	10	98	4
Genesee	1,667	266	6,822	1,326	644	163	39	8	76	7	90	5
Gladwin	1,048	193	3,801	942	393	121	37	9	70	9	95	4
Gogebic	175	108	1,172	830	21	37	12	20	57	31	99	0
Gd. Traverse	915	249	3,477	1,113	246	132	27	12	55	14	90	9
Gratiot	1,320	248	5,046	1,275	565	163	43	9	72	9	93	5
Hillsdale	1,633	272	5,984	1,281	824	194	50	8	77	7	83	6
Houghton	3	0	6	0	2	0	67	0	100	0	100	0
Huron	1,419	234	5,414	1,135	611	161	43	8	70	8	84	6
Ingham	1,321	242	4,432	1,035	576	159	44	9	74	8	87	6
Ionia	1,428	255	4,951	1,073	532	156	37	9	74	8	91	5
Iosco	744	176	2,566	736	195	93	26	11	45	12	90	7
Iron	510	175	2,669	1,336	150	97	29	16	57	18	92	10
Isabella	1,392	252	4,581	1,073	686	176	49	9	81	7	95	4
Jackson	2,307	311	8,470	1,471	931	204	40	7	68	6	92	3
Kalamazoo	1,207	246	4,704	1,252	473	152	39	10	74	9	86	7
Kalkaska	799	228	2,617	890	210	119	26	13	54	14	85	10
Kent	2,554	340	10,300	2,028	1,062	219	42	7	77	6	93	4
Keweenaw	1	0	5	0	0	0	0	0	100	0	100	0

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2013 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Lake	1,384	303	4,929	1,312	196	116	14	8	40	11	89	7
Lapeer	2,200	304	8,004	1,487	864	192	39	7	75	6	92	4
Leelanau	421	173	1,636	890	113	94	27	19	68	19	85	16
Lenawee	1,038	208	3,462	851	330	116	32	9	74	9	88	7
Livingston	1,437	235	5,297	1,217	569	148	40	8	74	7	90	5
Luce	0	0	0	0	0	0	0	0	0	0	0	0
Mackinac	22	37	197	371	0	0	0	0	100	0	100	0
Macomb	668	176	2,712	1,008	248	106	37	13	76	11	89	8
Manistee	931	248	3,904	1,317	266	136	29	12	67	13	89	8
Marquette	302	137	1,188	733	42	52	14	16	46	23	93	12
Mason	907	251	2,920	933	257	136	28	13	47	14	94	7
Mecosta	1,014	252	3,811	1,194	502	180	49	13	68	12	93	7
Menominee	880	222	4,078	1,363	342	147	39	13	61	13	89	9
Midland	1,111	225	3,904	950	493	152	44	10	75	9	95	4
Missaukee	616	205	2,437	949	192	108	31	15	59	17	88	11
Monroe	568	161	2,229	762	197	96	35	14	83	10	90	8
Montcalm	2,331	324	8,223	1,514	1,037	222	45	7	76	6	91	4
Montmorency	640	141	2,686	737	118	59	18	9	46	12	91	7
Muskegon	1,412	265	6,101	1,458	601	170	43	9	69	9	91	5
Newaygo	2,479	386	10,200	2,064	804	226	32	8	61	8	88	6
Oakland	1,472	229	5,208	1,057	525	139	36	8	71	8	84	6

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2013 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95%	Total	95%	Total	95%	%	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Oceana	1,026	256	3,903	1,245	443	168	43	13	65	12	90	8
Ogemaw	1,008	199	3,516	855	236	96	23	9	59	10	90	6
Ontonagon	176	109	1,266	1,093	39	52	22	26	45	32	100	0
Osceola	867	237	2,596	853	250	129	29	13	71	13	82	11
Oscoda	695	172	2,824	862	108	69	16	9	41	13	88	8
Otsego	589	141	2,327	818	174	82	29	12	65	12	95	5
Ottawa	1,992	309	7,747	1,602	933	212	47	8	73	7	88	5
Presque Isle	618	138	2,486	648	236	86	38	12	56	12	94	6
Roscommon	899	195	3,703	1,080	151	80	17	8	59	11	89	7
Saginaw	1,917	295	7,041	1,385	757	187	39	8	73	7	93	4
St. Clair	1,983	293	8,286	1,552	756	181	38	7	73	7	90	5
St. Joseph	1,104	233	4,151	1,149	556	164	50	11	78	9	96	4
Sanilac	2,227	314	8,779	1,537	869	197	39	7	73	6	90	4
Schoolcraft	61	61	165	153	40	52	66	44	66	44	92	12
Shiawassee	1,416	255	5,588	1,227	479	145	34	9	73	8	88	6
Tuscola	2,046	278	7,313	1,336	860	182	42	7	73	6	92	4
Van Buren	1,344	255	5,148	1,300	599	170	45	10	71	9	92	5
Washtenaw	1,347	232	4,894	1,079	525	143	39	8	81	7	89	5
Wayne	103	70	324	265	87	66	84	22	100	0	99	1
Wexford	1,252	287	4,885	1,331	437	175	35	11	57	12	87	8
Unknown	3,183	398	12,673	2,135	335	126	10	4	51	6	87	4

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the spring 2013 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)																
A	1,413	132	72	6	349	99	18	5	201	79	10	4	0	0	0	0
E	718	70	65	6	291	61	26	5	87	37	8	3	16	17	1	1
F	1,270	163	51	6	941	153	38	6	260	94	10	4	33	35	1	1
J	1,000	116	63	6	295	83	19	5	262	81	17	5	26	28	2	2
K	3,235	375	58	6	1,495	317	27	6	737	241	13	4	99	94	2	2
M	2,231	281	65	7	639	195	19	6	532	182	16	5	19	37	1	1
ZA	1,217	184	48	7	921	171	37	6	339	118	13	5	40	43	2	2
ZB	438	73	43	7	489	74	48	7	74	37	7	4	12	15	1	2
ZC	483	104	37	7	710	114	54	8	85	50	6	4	28	29	2	2
ZD	11	1	63	8	6	1	31	8	1	1	6	4	0	0	0	0
ZE	400	84	32	6	711	94	57	7	128	54	10	4	7	14	1	1
ZF	1,528	248	49	7	1,209	234	39	7	318	139	10	4	74	70	2	2
PMH	1	0	33	0	0	0	0	0	2	0	67	0	0	0	0	0
Subtotal	15,085	633	57	2	8,119	542	31	2	3,060	392	11	1	354	143	1	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2013)																
ZA	6,562	474	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB	2,722	329	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC	4,038	391	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD	409	133	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	6,630	475	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF	5,878	455	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	570	158	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	26,268	395	100	0	0	0	0	0	0	0	0	0	0	0	0	0

^aRow totals may not equal 100% because of rounding errors.

Table 4 (continued). Estimated number and proportion of hunters hunting on private and public lands during the spring 2013 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2013)																
A	389	146	72	14	69	60	13	10	64	60	12	10	16	30	3	5
E	1,174	252	79	8	177	99	12	6	127	84	9	5	0	0	0	0
F	913	223	51	9	638	185	36	8	207	108	12	6	0	0	0	0
J	592	178	61	12	232	112	24	10	98	73	10	7	47	52	5	5
K	4,301	461	68	4	1,358	269	21	4	638	188	10	3	47	52	1	1
M	200	103	74	19	22	30	8	11	32	42	12	15	16	30	6	11
ZA ^b	5,482	513	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB ^b	1,754	307	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC ^b	2,284	345	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD ^b	241	115	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE ^b	4,340	462	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF ^b	4,259	461	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	364	143	61	15	64	60	11	9	0	0	0	0	173	99	29	14
Subtotal	25,048	733	86	1	2,268	344	8	1	1,386	272	5	1	284	126	1	0

^aRow totals may not equal 100% because of rounding errors.

^bLicenses for the unlimited quota hunt were valid only on private lands in Management Unit ZZ in southern Michigan (Figure 1).

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunts.

Table 4 (continued). Estimated number and proportion of hunters hunting on private and public lands during the spring 2013 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)																
A	41	15	100	0	0	0	0	0	0	0	0	0	0	0	0	0
E	54	18	72	13	8	7	10	9	13	9	17	11	0	0	0	0
F	38	15	75	15	5	6	10	10	8	7	15	12	0	0	0	0
J	38	15	64	15	18	10	30	14	4	4	6	6	0	0	0	0
K	212	34	70	6	54	18	18	5	36	14	12	5	0	0	0	0
M	66	20	84	10	10	8	13	9	3	4	3	5	0	0	0	0
ZA	382	44	94	3	13	9	3	2	13	9	3	2	0	0	0	0
ZB	151	29	94	5	10	8	6	5	0	0	0	0	0	0	0	0
ZC	254	37	91	4	23	12	8	4	0	0	0	0	3	4	1	1
ZD	20	11	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	278	39	94	3	10	8	3	3	6	6	2	2	3	4	1	1
ZF	267	38	89	4	21	11	7	4	8	7	3	2	0	0	0	0
Unknown	13	9	63	26	3	4	13	18	0	0	0	0	5	6	25	23
Subtotal	1,731	61	87	2	146	29	7	1	99	24	5	1	10	8	1	0
Statewide ^c	66,959	1,048	81	1	10,468	642	13	1	4,512	478	5	1	682	196	1	0

^aRow totals may not equal 100% because of rounding errors.

^bLicenses for the unlimited quota hunt were valid only on private lands in Management Unit ZZ in southern Michigan (Figure 1).

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunts.

Table 5. Status of turkey population reported by turkey hunters during the spring 2013 Michigan turkey hunting season.

Management unit	Turkey population status (% of hunters) ^a				
	Increasing	Decreasing	Stable	Unknown	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	10	43	30	17	0
E	14	27	40	19	0
F	11	29	31	26	3
J	14	27	42	16	1
K	11	32	40	16	1
M	15	38	30	16	1
ZA	15	21	41	22	1
ZB	22	13	43	21	1
ZC	18	16	39	25	1
ZD	25	0	13	44	19
ZE	16	10	48	25	1
ZF	20	21	40	16	2
Pure MI Hunt	0	0	33	67	0
Mean	15	27	38	19	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2013)					
ZA	18	21	49	11	1
ZB	25	14	46	14	1
ZC	19	16	50	13	2
ZD	35	0	47	19	0
ZE	23	18	47	12	1
ZF	18	22	48	12	0
Unknown	16	25	27	27	7
Mean	20	18	48	13	1

^aRow totals may not equal 100% because of rounding errors.

Table 5 (continued). Status of turkey population reported by turkey hunters during the spring 2013 Michigan turkey hunting season.

Manage- ment unit	Turkey population status (% of hunters) ^a				
	Increasing	Decreasing	Stable	Unknown	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2013)					
A	12	42	24	19	3
E	16	18	48	16	1
F	9	43	23	24	1
J	19	24	37	20	0
K	13	34	36	16	0
M	12	25	32	31	0
ZA	15	21	48	16	0
ZB	22	15	46	16	1
ZC	13	17	53	17	0
ZD	33	7	34	27	0
ZE	19	17	48	15	1
ZF	15	22	47	15	1
Unknown	8	24	32	31	5
Mean	15	24	43	17	1
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)					
A	6	44	19	31	0
E	24	17	28	31	0
F	0	25	35	35	5
J	13	30	32	26	0
K	9	25	40	25	1
M	23	13	42	23	0
ZA	13	20	37	29	1
ZB	17	8	54	21	0
ZC	23	15	37	26	0
ZD	38	13	50	0	0
ZE	22	11	37	27	3
ZF	15	11	44	30	0
Unknown	0	25	13	38	25
Mean	17	16	39	27	1
Statewide ^b	17	23	43	17	1

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean interference levels (all hunts and periods).

Table 6. How hunters rated their hunting experience during the spring 2013 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					No answer
	Excellent	Very good	Good	Fair	Poor	
Hunt periods with quotas (General limited quota hunt periods)						
A	10	17	25	19	27	2
E	17	18	30	18	16	0
F	11	14	31	27	15	3
J	14	22	31	16	15	1
K	17	17	22	25	17	2
M	11	17	27	24	20	1
ZA	20	17	35	13	14	1
ZB	17	23	29	15	11	3
ZC	21	21	26	21	8	2
ZD	6	25	19	19	13	19
ZE	25	24	30	12	9	1
ZF	19	16	35	20	8	2
Pure MI Hunt	100	0	0	0	0	0
Mean	17	18	28	20	15	2
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2013)						
ZA	21	29	29	13	7	0
ZB	25	27	24	13	9	1
ZC	27	21	27	12	9	3
ZD	32	28	28	12	0	0
ZE	24	24	25	17	9	1
ZF	23	23	27	16	9	0
Unknown	9	20	24	31	13	2
Mean	24	25	27	15	9	1

^aRow totals may not equal 100% because of rounding errors.

Table 6 (continued). How hunters rated their hunting experience during the spring 2013 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					
	Excellent	Very good	Good	Fair	Poor	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2013)						
A	12	12	16	33	24	3
E	14	23	27	20	15	1
F	12	14	23	25	25	1
J	15	25	24	19	17	0
K	14	21	29	19	17	0
M	13	25	12	42	7	0
ZA	19	21	31	17	12	1
ZB	20	19	28	24	8	0
ZC	16	28	29	17	9	1
ZD	40	13	33	7	7	0
ZE	24	26	25	18	6	1
ZF	19	18	33	18	11	0
Unknown	19	5	13	42	18	3
Mean	18	21	28	20	13	1
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)						
A	13	19	38	13	13	6
E	21	24	31	21	3	0
F	40	35	10	10	0	5
J	32	26	26	4	13	0
K	25	17	31	18	8	2
M	23	13	32	26	6	0
ZA	27	23	27	17	7	0
ZB	26	19	36	11	8	0
ZC	30	19	33	14	5	0
ZD	13	38	13	38	0	0
ZE	37	20	26	12	3	2
ZF	28	25	26	17	3	0
Unknown	13	13	13	13	25	25
Mean	28	21	29	15	6	1
Statewide ^b	20	21	28	18	12	1

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean satisfaction levels (all hunts and periods).

Table 7. Estimated amount of hunter interference experienced by turkey hunters during the spring 2013 Michigan turkey hunting season.

Management unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	77	17	6	1	0
E	72	22	6	0	0
F	65	24	7	2	2
J	67	24	5	3	2
K	62	26	8	3	1
M	76	15	5	2	2
ZA	70	19	9	2	1
ZB	56	30	11	2	1
ZC	54	27	16	2	1
ZD	63	19	0	0	19
ZE	64	19	11	4	1
ZF	55	33	8	2	1
Pure MI Hunt	100	0	0	0	0
Mean	66	23	8	2	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2013)					
ZA	73	18	7	1	0
ZB	66	22	8	3	1
ZC	71	17	9	1	2
ZD	78	12	10	0	0
ZE	70	20	8	2	1
ZF	72	18	8	2	0
Unknown	73	16	9	0	2
Mean	71	18	8	2	1

^aRow totals may not equal 100% because of rounding errors.

Table 7 (continued). Estimated amount of hunter interference experienced by turkey hunters during the spring 2013 Michigan turkey hunting season.

Management unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2013)					
A	85	3	6	3	3
E	78	16	2	1	2
F	79	15	5	1	0
J	75	17	7	2	0
K	74	16	9	1	1
M	92	7	0	0	0
ZA	78	14	7	1	0
ZB	77	17	5	1	0
ZC	80	17	3	0	1
ZD	60	33	7	0	0
ZE	78	14	5	3	1
ZF	73	17	7	1	0
Unknown	58	18	13	5	5
Mean	76	16	6	1	1
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)					
A	81	13	6	0	0
E	72	17	3	7	0
F	80	5	10	0	5
J	87	9	4	0	0
K	82	11	4	2	1
M	84	10	6	0	0
ZA	78	13	9	0	0
ZB	68	28	3	0	0
ZC	67	21	11	1	0
ZD	88	13	0	0	0
ZE	81	9	5	3	1
ZF	77	17	5	1	0
Unknown	50	13	0	13	25
Mean	77	15	6	1	1
Statewide ^b	71	19	7	2	1

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean interference levels (all hunts and periods).

Table 8. Estimated number of hunting efforts, hunters, hunting success, noninterfered hunters, and hunter rating of the 2013 spring turkey hunting season, by hunt periods.

Variable	Hunt periods beginning									
	April 22		April 29		May 6		May 13		All periods ^a	
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Hunting efforts (days)	164,634	4,806	21,177	1,901	148,287	6,424	7,015	1,245	341,113	7,972
Number of hunters	43,052	713	6,225	473	31,736	744	1,608	206	82,621	929
Successful hunters (n)	17,890	727	1,906	314	11,544	690	592	135	31,931	1,036
Successful hunters (%)	42	2	31	4	36	2	37	7	39	1
Noninterfered hunters (n) ^b	38,456	762	5,479	458	29,108	774	1,463	201	74,507	1,036
Noninterfered hunters (%) ^b	89	1	88	3	92	1	91	3	90	1
Favorable rating (n) ^c	30,260	789	3,793	406	21,280	799	1,203	185	56,535	1,130
Favorable rating (%) ^c	70	1	61	5	67	2	75	6	68	1

^aRow totals may not equal totals for all periods because of rounding errors.

^bProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^cHunters rating their hunting experience as excellent, very good, or good.

Table 9. Comparison of the estimated number of hunters, hunting effort, and harvest between 2012 and 2013 Michigan spring turkey hunting seasons, summarized by regions.

Region ^a	Hunters (No.) ^b					Hunting efforts (days)					Harvest (No.)				
	2012		2013		Change (%)	2012		2013		Change (%)	2012		2013		Change (%)
	Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL	
UP	3,183	237	3,537	284	11	18,551	2,935	18,056	2,680	-3	988	208	1,155	245	17
NLP	23,249	700	23,603	744	2	94,084	4,580	93,971	4,793	0	7,472	550	7,583	578	1
SLP	52,861	872	53,133	918	1	211,209	6,449	216,413	6,584	2	22,571	834	22,859	859	1
Unknown	3,581	404	3,183	398		14,649	2,404	12,673	2,135		346	127	335	126	
Total	82,297	866	82,621	929	0	338,493	7,921	341,113	7,972	1	31,377	998	31,931	1,036	2

^aRegions included the Upper Peninsula (UP), the Northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the Southern Lower Peninsula (SLP).

^bNumber of hunters did not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunt.

^cP<0.005.

Table 10. Comparison of estimated hunter success, hunter satisfaction, and hunt interference between 2012 and 2013 Michigan spring turkey hunting season, summarized by regions.

Region ^a	Hunter success					Hunter satisfaction ^b					Noninterfered hunters ^c				
	2012		2013		Differ-ence (%)	2012		2013		Differ-ence (%)	2012		2013		Differ-ence (%)
	%	95% CL	%	95% CL		%	95% CL	%	95% CL		%	95% CL	%	95% CL	
UP	31	6	33	6	2	56	7	56	7	-1	91	4	93	4	2
NLP	32	2	32	2	0	58	2	60	2	2	91	1	90	1	-1
SLP	43	1	43	1	0	70	1	74	1	4*	91	1	90	1	-1
Total	38	1	39	1	1	65	1	68	1	3*	91	1	90	1	0

^aRegions included the Upper Peninsula (UP), the Northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the Southern Lower Peninsula (SLP).

^bHunters rating their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

*P<0.005.

Table 11. Number of turkeys harvested and hunter success, summarized by hunting device, during the spring turkey hunting season in Michigan, 2010-2013.

Year	Number of turkey harvested by device								Hunter success by device ^a					
	Firearm		Crossbows		Other bows ^b		Unknown		Firearm		Crossbows		Other bows ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
2010	34,984	1,093	525	161	1,519	279	22	32	41	1	20	6	20	3
2011	28,831	1,017	590	170	1,143	228	23	34	37	1	17	5	17	3
2012	29,611	984	650	172	1,055	214	62	57	39	1	17	4	18	3
2013	29,875	1,018	892	202	1,071	225	93	79	39	1	22	5	18	4

^aHunters harvesting a turkey.

^bIncluded longbows, recurve, and compound bows.

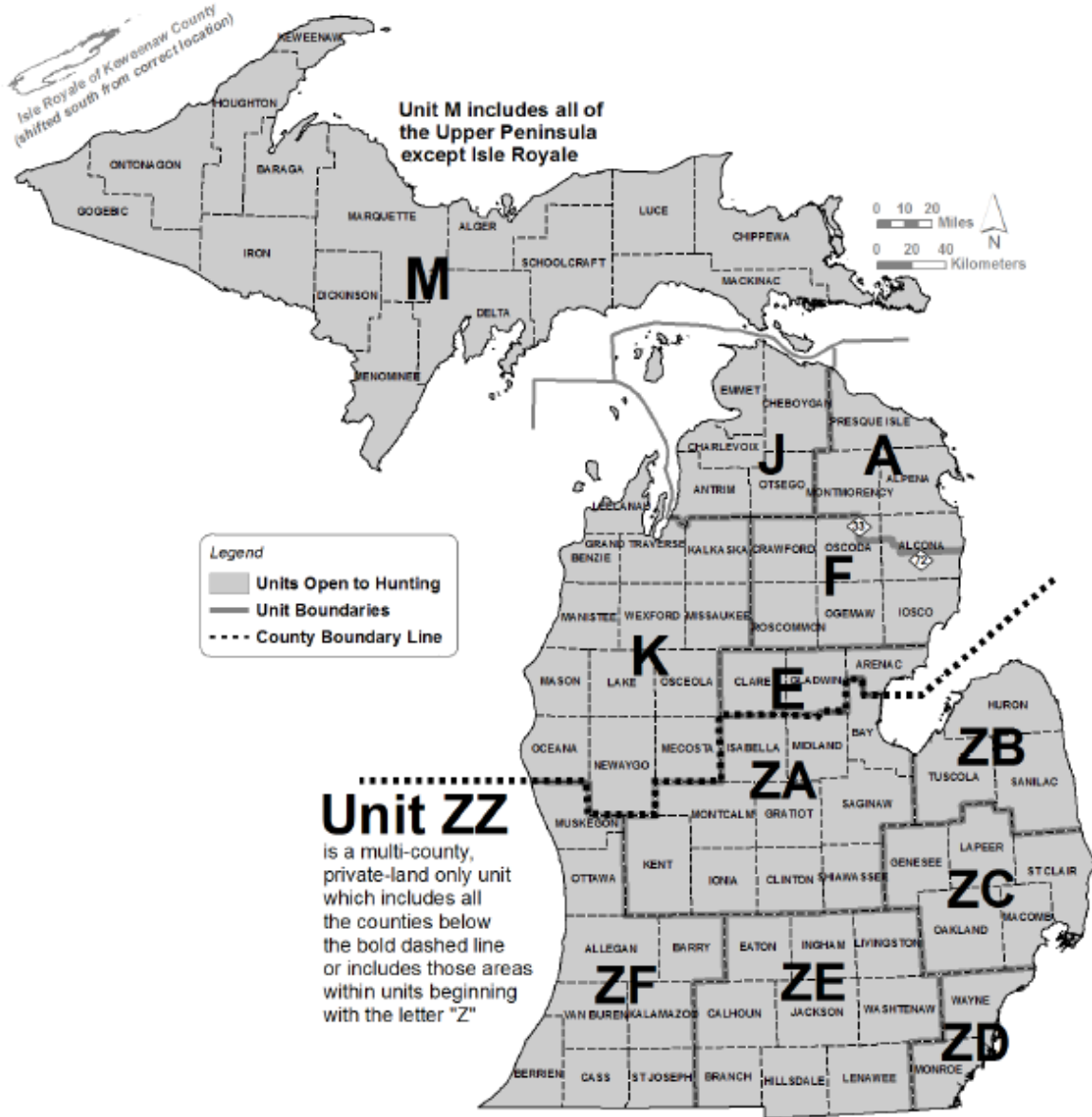


Figure 1. Management units in Michigan open to spring turkey hunting in 2013.

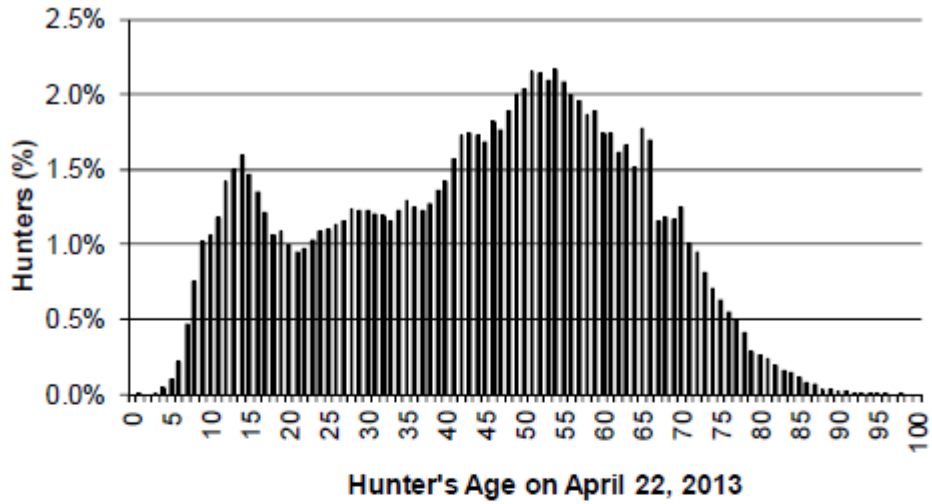


Figure 2. Age of people that purchased a turkey hunting license in Michigan for the 2013 spring hunting season ($\bar{x} = 44$ years). Licenses were purchased by 104,279 people.

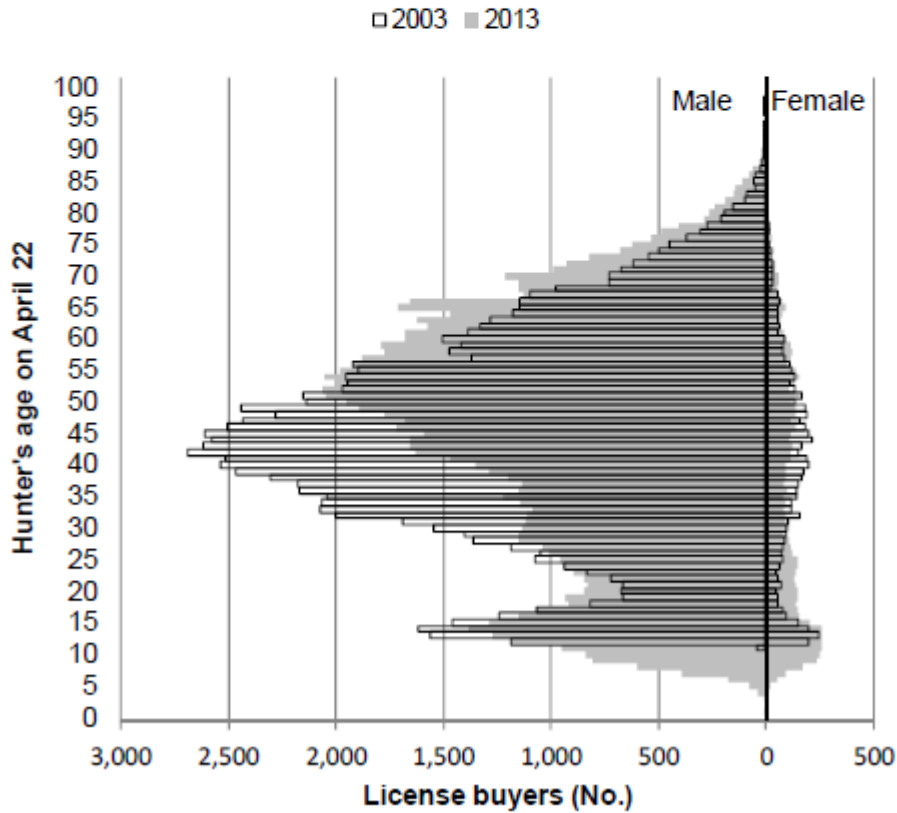


Figure 3. Number of spring turkey hunting license buyers in Michigan by age and sex during 2003 and 2013 hunting seasons. The number of people buying a license was 107,866 in 2003 and 104,279 in 2013.

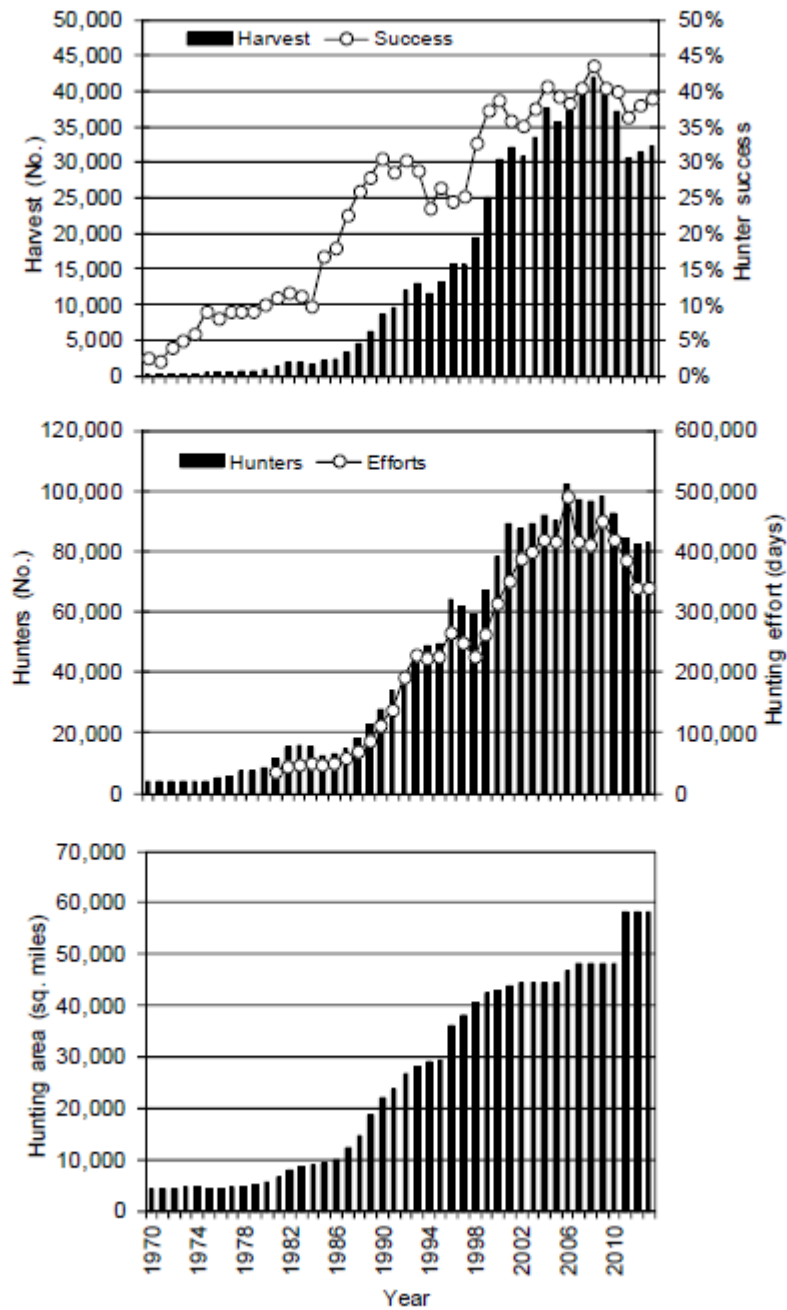


Figure 4. Estimated number of hunters, harvest, hunting efforts, hunter success, and area open to hunting during the Michigan spring turkey hunting season, 1970-2013. Estimates of hunting effort generally were not available before 1981.

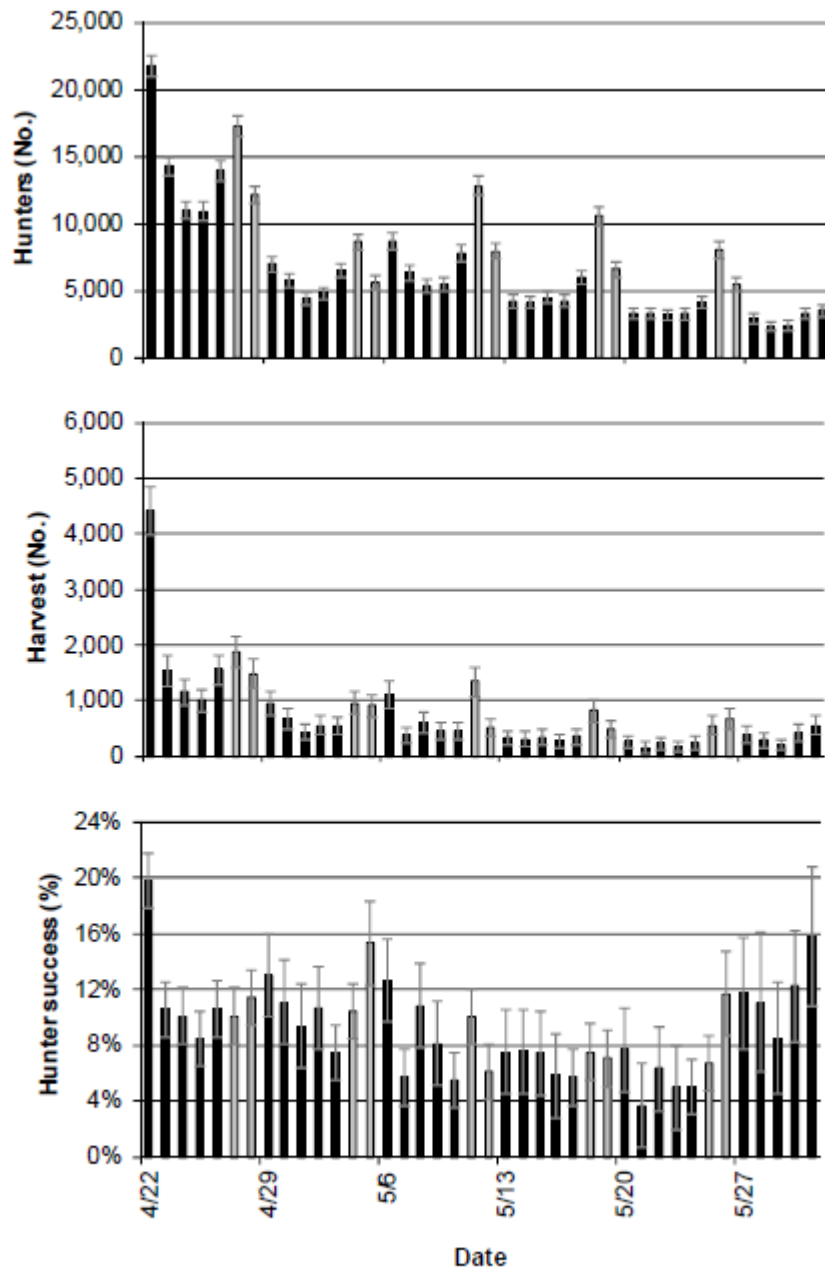


Figure 5. Estimated number of hunters, harvest, and hunter success by date during the 2013 Michigan spring turkey hunting season (includes all hunts). An additional $2,983 \pm 380$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

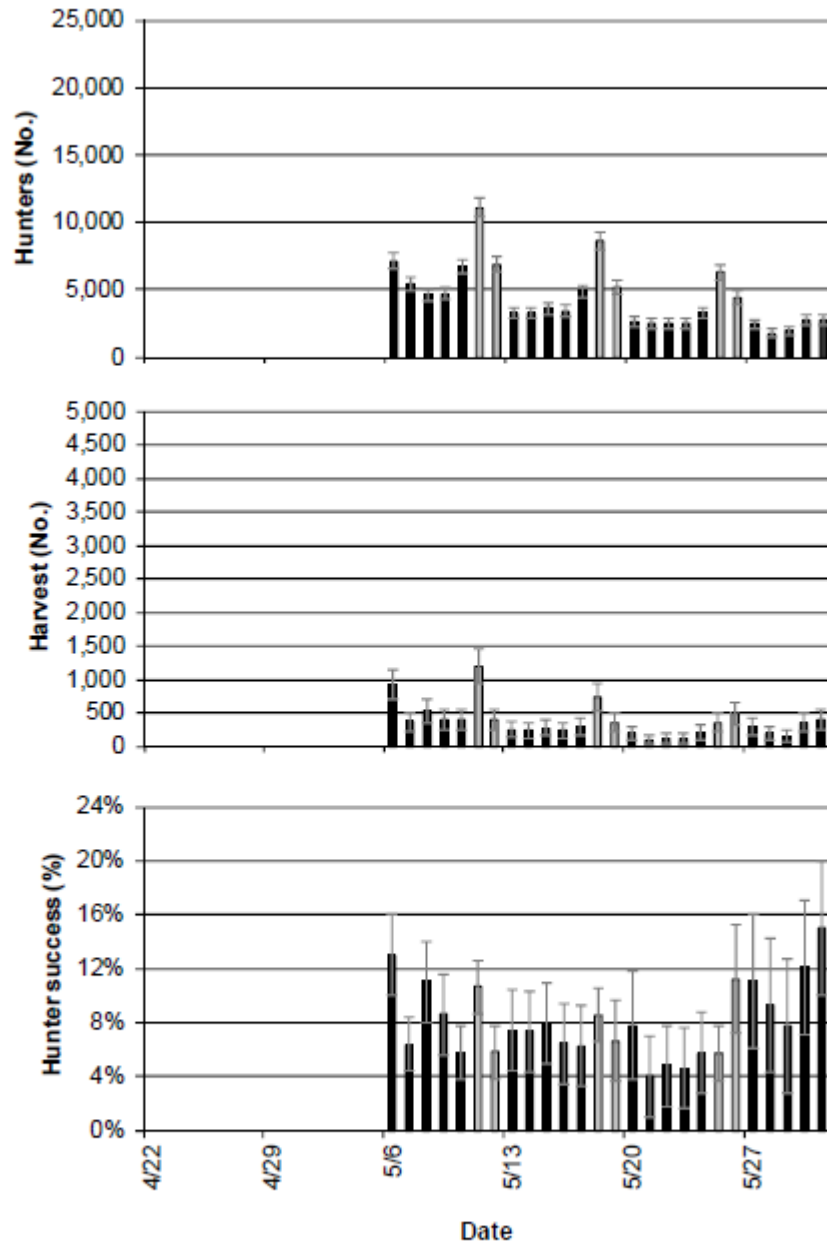


Figure 6. Estimated number of hunters, harvest, and hunter success by date during Hunt 234 of the 2013 Michigan spring turkey hunting season (May 6-31). An additional $1,521 \pm 275$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

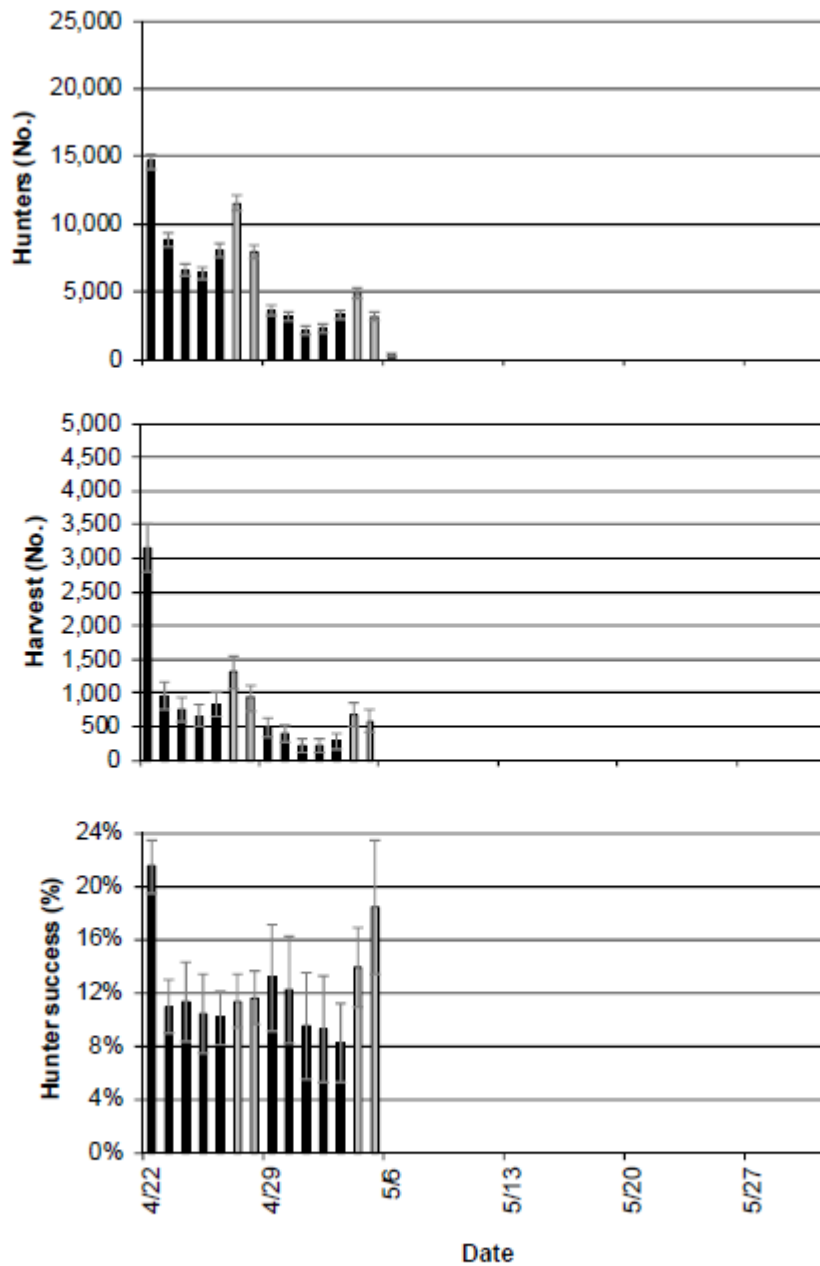


Figure 7. Estimated number of hunters, harvest, and hunter success by date during Hunt 301 of the 2013 Michigan spring turkey hunting season (April 22-May 5). An additional 968 ± 203 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

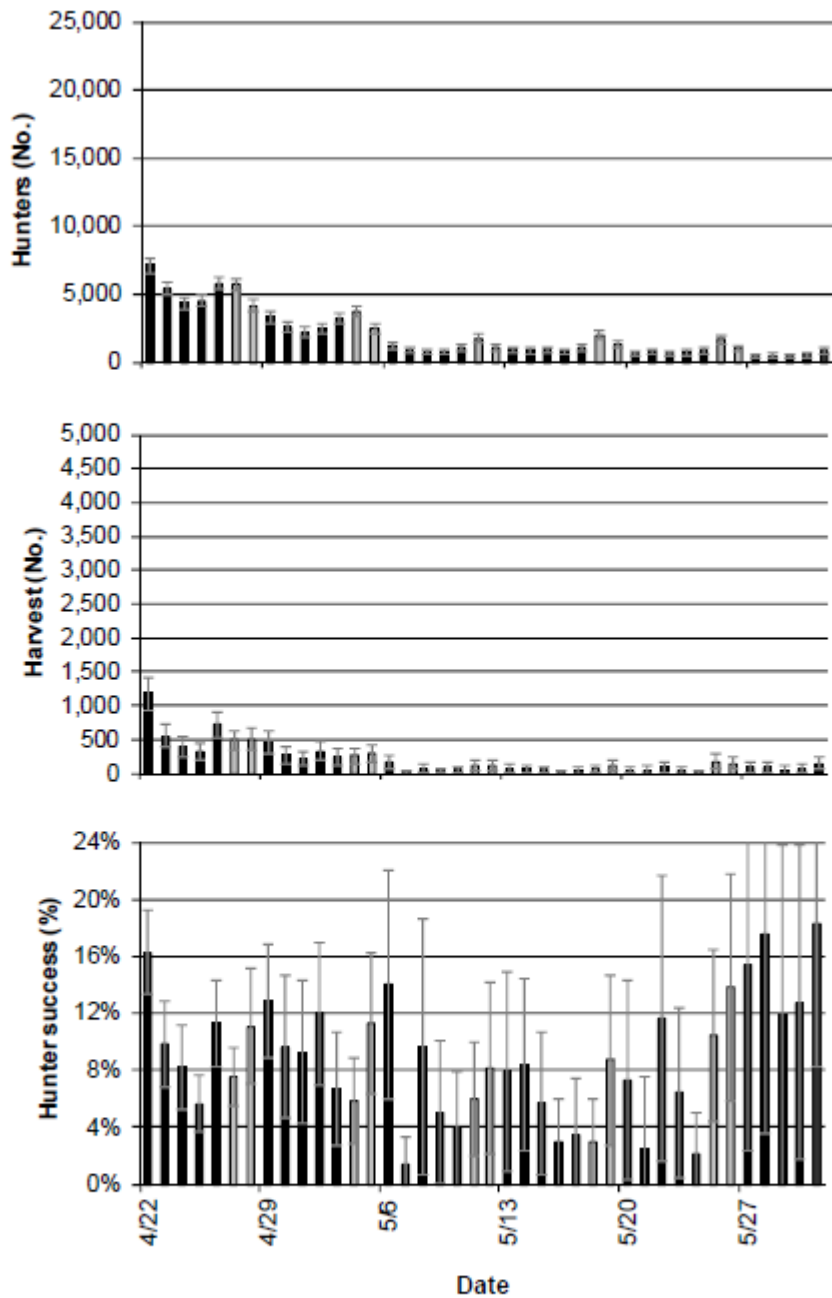


Figure 8. Estimated number of hunters, harvest, and hunter success by date during all hunts, except for mentored youth hunts and hunts 234 and 301 of the 2013 Michigan spring turkey hunting season. An additional 480 ± 167 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

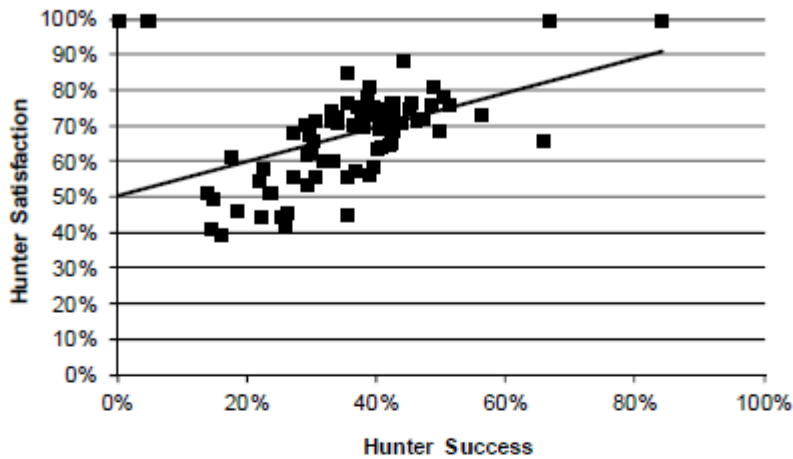


Figure 9. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter success for each of 78 counties in Michigan during the 2013 spring turkey hunting season (included only counties with at least 30 hunters).

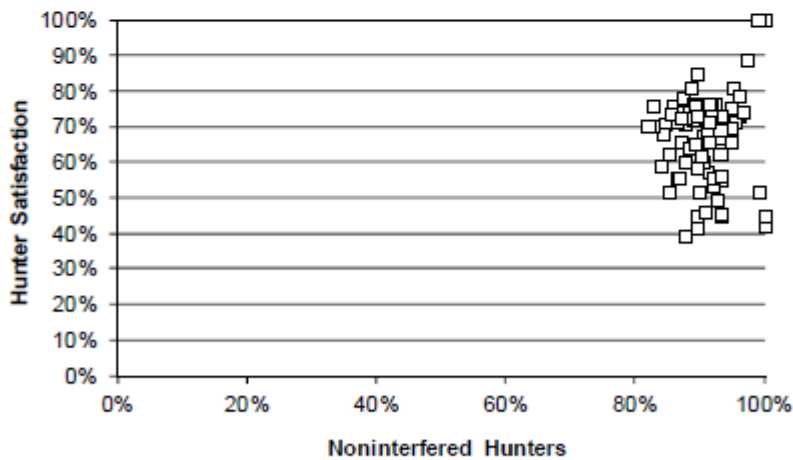


Figure 10. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter interference for each of 78 counties in Michigan during the 2013 spring turkey hunting season (included only counties with at least 30 hunters). Noninterfered hunters were the proportion of hunters that indicated that they experienced no or only minor interference from other hunters.



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2013 MICHIGAN FALL TURKEY HUNTER SURVEY

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ABSTRACT

A survey of turkey hunters was conducted following the 2013 fall hunting season to determine turkey harvest and hunter participation. Overall, 31,823 people purchased 33,313 licenses in 2013 (versus 30,620 people purchased 32,271 licenses in 2012). The number of licenses sold in 2013 increased 3% from 2012. Excluding the Mentored Youth Hunt licenses, 20,078 hunters purchased 21,483 licenses in 2013, which was nearly 5% fewer licenses sold than in 2012 (21,001 hunters purchased 22,580 licenses in 2012). Most license buyers (97%) purchased a single hunting license. During the 2013 fall hunt, an estimated 17,761 hunters harvested about 5,430 turkeys. Hunter numbers and their hunting effort increased significantly by 14% and 16%, respectively, from 2012. The 2013 harvest decreased 10% from 2012 (6,042 turkeys harvested in 2012). Hunter success was 28% in 2013 (versus 36% success in 2012). About 59% of the hunters in 2013 rated their hunting experience as excellent, very good, or good (versus 61% satisfaction in 2012). The number of turkey harvested and hunting success in 2013 decreased significantly from 2012; however, hunter satisfaction did not change significantly from 2012.

INTRODUCTION

Fall wild turkey (*Meleagris gallopavo*) hunting seasons were implemented in Michigan to help maintain turkey populations at levels matching biological and social carrying capacities. In 2013, 11 management units totaling about 44,943 square miles were open for fall turkey hunting during September 15 through November 14 (Figure 1). The area open to hunting in 2013 increased by 25% from 2012 (an additional 8,865 square miles), and three new management units were created (units J, T, and WA).



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Most people interested in obtaining a turkey hunting license could enter into a random drawing (lottery) conducted by the Department of Natural Resources (DNR) or purchase a license for Hunt 501 without going through the lottery. Applicants could choose one hunt area for the drawing. Any licenses available after the drawing was completed were made available on a first-come, first-served basis to applicants unsuccessful in the drawing. Beginning one week after licenses were available to unsuccessful applicants, all remaining licenses were made available to nonapplicants. Licenses were available for six management units (units HA, J, L, M, W, and YY) after the drawing was completed (Table 1). Hunters could purchase one of these remaining licenses per day until quotas were met.

Licenses for Hunt 410 (Unit HA) and Hunt 501 (Unit YY) were valid on private lands only, while licenses for hunts 401, 402, 403, 404, 405, 406, 407, 408, and 409 (units G, GB, GC, J, L, M, T, W, and WA) were valid on either land ownership types (i.e., public or private land). Hunters were allowed to take one turkey of either sex with the harvest tag issued with each license. Turkey could be harvested with a shotgun, crossbow, or archery equipment. Hunters 12-years-old or older could use a crossbow to hunt turkeys. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNR-issued crossbow permit did not need the stamp.

A mentored youth hunting program started in 2012. Under this program, a mentored youth hunting license was created and could be purchased by youth hunters aged 9 and younger. The youth hunter had to participate with a mentor who was at least 21 years old. The mentored youth hunting license allowed the youth hunter to hunt small game, turkey, deer, trap furbearers, and fish for all species. A turkey kill tag issued under the mentored youth hunting license was valid for one turkey during any hunt period, in any open hunt unit, on private or public land. No application was required to purchase the mentored youth license.

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2010. Individuals could purchase an unlimited number of applications for the PMH. Three individuals were randomly chosen from all applications, and winners received elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The fall turkey hunting licenses were valid for all areas open for hunting turkey.

The Natural Resources Commission and DNR have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used to meet their statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys.

METHODS

The DNR provided hunters the option to voluntarily report information about their turkey hunting activity via the internet. This option was advertised in the hunting regulations booklet, on the DNR website, and in an email message that was sent to licensees that had provided an email address to the DNR. Hunters could report information anytime during the hunting season. Hunters reported whether they hunted, number of days spent afield, and how many turkeys they harvested. Successful hunters also were asked to report where their turkeys were taken (public or private land) and beard length of harvested birds. Birds with a beard <4 inches long were classified as juveniles (<1 year old), while birds with longer beards were adults (≥ 1 year old) (Kelly 1975). In addition, hunters were asked what type of hunting equipment was used to hunt turkeys and kill turkeys. Finally, hunters rated their overall hunting experience (excellent, very good, good, fair, or poor).

Following the 2013 fall turkey hunting season, a questionnaire was sent to 13,473 randomly selected people that had purchased a 2013 turkey hunting license (resident turkey, senior resident turkey, nonresident turkey, Mentored Youth Hunt, Pure Michigan licenses) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire were asked to report the same information that was collected from hunters that reported voluntarily on the internet.

Estimates were calculated using a stratified random sampling design that included 15 strata (Cochran 1977). Strata 1-11 consisted of hunters with licenses for a single management unit ($N_G=106$; $N_{GB}=127$; $N_{GC}=119$; $N_{HA}=1,017$; $N_J=925$; $N_L=617$; $N_M=1,040$; $N_T=106$; $N_W=104$; $N_{WA}=46$; and $N_{YY}=15,202$). The twelfth stratum included hunters obtaining only a Mentored Youth Hunt license ($N=11,743$). The thirteenth stratum included hunters obtaining only a Pure Michigan Hunt license ($N=3$). The fourteenth stratum consisted of hunters having licenses for multiple management units ($N=180$). Finally, hunters that had voluntarily reported information about their hunting activity via the internet before the mail survey sample was selected were treated as the fifteenth stratum ($N=488$).

Because estimates were based on information collected from random samples of hunting license buyers, these estimates were subject to sampling errors (Cochran 1977). Thus, a 95% confidence limit (CL) was calculated for each estimate. In theory, this CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, estimates were not adjusted for these possible biases.

Statistical tests are used routinely to determine the likelihood that the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping

95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-December 2013, and up to two follow-up questionnaires were mailed to nonrespondents. Although 13,473 people were sent the questionnaire, 209 surveys were undeliverable resulting in an adjusted sample size of 13,264. Questionnaires were returned by 7,719 people, yielding a 58% adjusted response rate. In addition, 488 people voluntarily reported information about their hunting activity via the internet.

RESULTS

In 2013, the DNR offered 51,850 licenses for sale (4% greater than the quota in 2012), excluding Pure Michigan Hunt and Mentored Youth Hunt licenses (Table 1). A total of 2,942 licenses were purchased by people successful in the drawing, and another 497 leftover licenses were purchased by people that had applied for a hunt in the drawing. A total of 18,041 licenses were purchased by people that had not entered into the drawing. In addition, 3 people were awarded a Pure Michigan Hunt license, and 11,830 youth obtained a turkey hunting license when they obtained their Mentored Youth Hunt license.

Overall, 31,823 people purchased 33,313 licenses in 2013 (versus 30,620 people purchased 32,271 licenses in 2012). The number of licenses sold in 2013 increased 3% from 2012. Excluding the Mentored Youth Hunt licenses, 20,078 hunters purchased 21,483 licenses in 2013, which was nearly 5% fewer licenses sold than in 2012 (21,001 hunters purchased 22,580 licenses in 2012).

Excluding people obtaining a Mentored Youth Hunt license, the average age of the 20,078 license buyers was 48 years (Figure 2), and about 8% of the license buyers were younger than 17 years old (1,548). Hunters with a Mentored Youth Hunt license were excluded because only $19 \pm 2\%$ of them actually hunted (Table 2).

Including all license types, most license buyers (97%) purchased a single hunting license in 2013 (Figure 3). About 3% of hunters purchased 2 licenses and less than 1% of hunters purchased 3 or more licenses.

Excluding people obtaining a Mentored Youth Hunt license, the number of people buying a license in 2013 (20,078) increased by about 6% in ten years from 2002 (19,025 people purchased a license in 2003). Although more people purchased a license in 2013 than in 2003, there were fewer license buyers for most age classes between 30 and 50 years of age in 2013 (Figure 4). However, there were increased hunter numbers among the youngest and oldest age classes in 2013. The increased hunter numbers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased. The increased participation among the youngest hunters likely reflected the lowering of the minimum age requirements. In 2013, hunters had to be at least 10

years old to participate (excluding Mentored Youth Hunts); while the hunters had to be at least 12 years old to participate in 2003.

In 2013, about 17,761 hunters spent 111,414 days afield pursuing turkeys ($\bar{x} = 6.3 \pm 0.2$ days/hunter) (Tables 3 and 4, Figure 5). The number of people pursuing turkeys and their hunting effort in 2013 increased significantly from 2012 (14% and 16% increase, respectively). About 93% of the hunters that went afield were males ($16,485 \pm 265$) and 7% of the hunters were females ($1,276 \pm 132$).

About 28% of active hunters successfully harvested a turkey in 2013, and they harvested an estimated 5,430 turkeys (Tables 5 and 6). The number of turkeys harvested decreased significantly by 10% from 2012 (6,042 turkeys harvested in 2012), and hunter success was significantly lower (28% versus 36%) than in 2012 (Figure 5). Among the 5,036 hunters that took at least one turkey, 94% ($4,732 \pm 206$) of these hunters took one turkey, 5% (236 ± 50) took 2 turkeys, and about 1% (68 ± 24) took more than 2 turkeys (Figure 6). Hunter success was statistically greater for hunters using private lands than for hunters using public lands in 2013 (29% versus 19%, Table 5).

About 93% ($16,439 \pm 267$) of turkey hunters hunted solely on private land, 5% (925 ± 64) hunted on public land only, and 2% (359 ± 44) hunted on both private and public lands. Additionally, less than 1% of hunters (39 ± 21) hunted on land of unknown ownership. Of the 5,430 turkeys harvested in 2013, 95% of these birds were taken on private land (5,171), while about 3% of the harvest (249) was taken on public land (Table 6). About 62% of the harvested birds had a beard ($3,363 \pm 189$). Most of these bearded birds (84%) were adults ($2,828 \pm 175$); 16% were juvenile birds (535 ± 78).

Of the 17,761 turkey hunters in 2013, nearly 59% rated their hunting experience as either excellent, very good, or good (Table 7). Satisfaction was statistically greater for hunters using private lands than for hunters using public lands (59% versus 50%). Changes in hunter satisfaction between years generally parallel changes in hunter success (Figure 7). Between 2012 and 2013, hunter success decreased significantly (36% in 2012 versus 28% in 2013); however, satisfaction did not change significantly (61% in 2012 versus 59% in 2013).

Hunter numbers were greatest in Lapeer, Sanilac, Tuscola, and St. Clair counties; these counties had more than 600 hunters (Table 8). Harvest was greatest in Sanilac, Tuscola, and Lapeer counties; these counties had more than 200 turkeys taken by hunters.

Most hunters ($64 \pm 1\%$; $11,443 \pm 280$ hunters) used shotguns while hunting turkeys, although $26 \pm 1\%$ ($4,613 \pm 212$) used a crossbow, and $22 \pm 1\%$ ($3,865 \pm 189$) of the hunters used either a compound, recurve, or long bow. About 71% ($3,838 \pm 209$) of the harvested turkeys were taken with a shotgun, while 17% (931 ± 104) of harvested turkeys were taken with a crossbow. About 9% (500 ± 76) were taken with either a compound, recurve, or long bow. About $31 \pm 1\%$ of the hunters using a shotgun took at least one turkey with their shotgun; $20 \pm 2\%$ of the hunters using a crossbow harvested

a turkey; and $13 \pm 2\%$ of hunters using either a compound, recurve, or long bow took a turkey.

About $71 \pm 2\%$ of the turkey hunters using a crossbow had obtained the crossbow stamp. However, $81 \pm 2\%$ of the hunters using a crossbow in 2013 had obtained a crossbow stamp during at least one year during 20011 through 2013.

ACKNOWLEDGEMENTS

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Figure 1. Management units open for fall turkey hunting in Michigan, 2013.

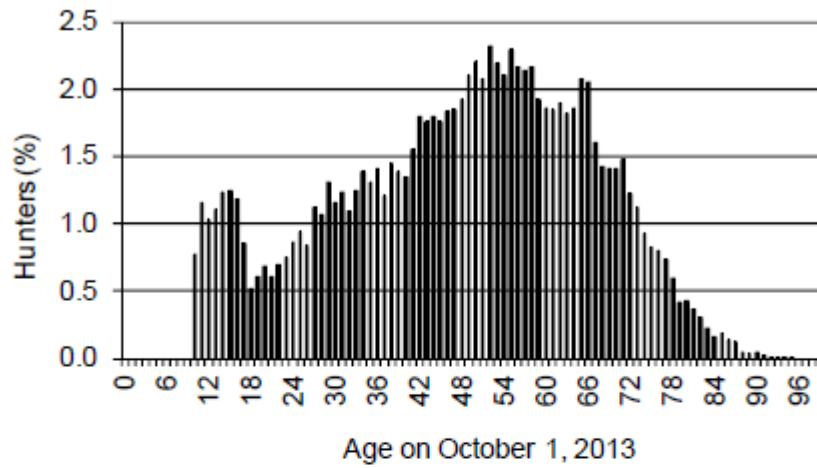


Figure 2. Age of people that purchased a turkey hunting license in Michigan for the 2013 fall hunting season (\bar{x} = 48 years). Licenses were purchased by 20,078 people, excluding Mentored Youth Hunt license buyers.

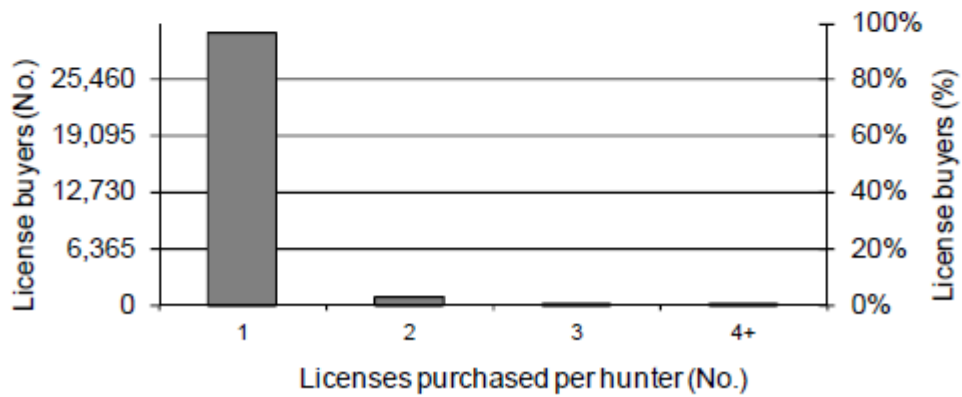


Figure 3. Number of licenses purchased per person for hunting turkey in Michigan during the 2013 fall hunting season (included all hunting license types).

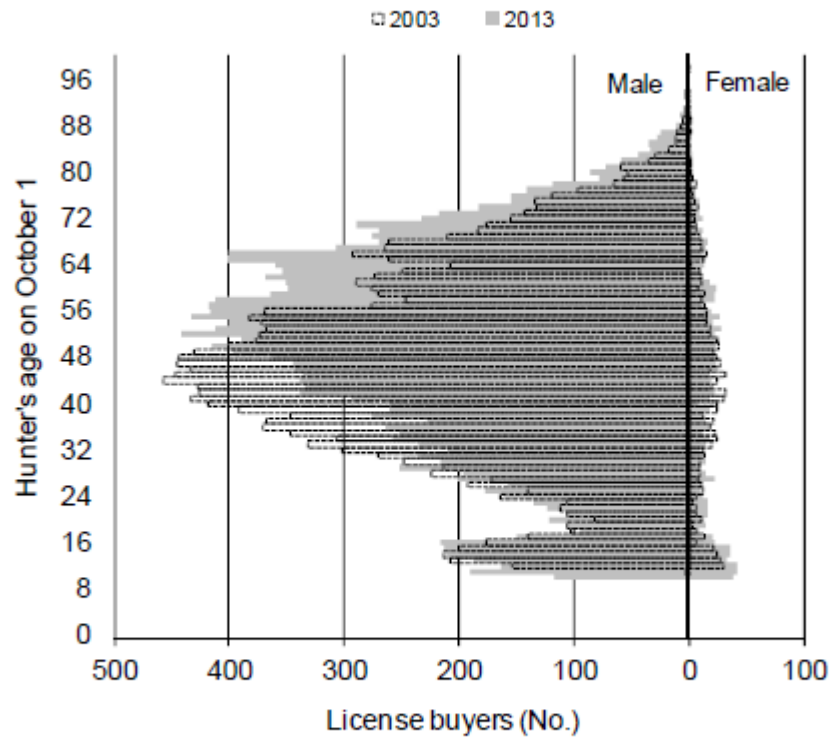


Figure 4. Number of fall turkey hunting license buyers in Michigan by age and sex during 2003 and 2013 hunting seasons, excluding Mentored Youth Hunt licenses. The number of people buying a license was 19,025 in 2003 and 20,078 in 2013.

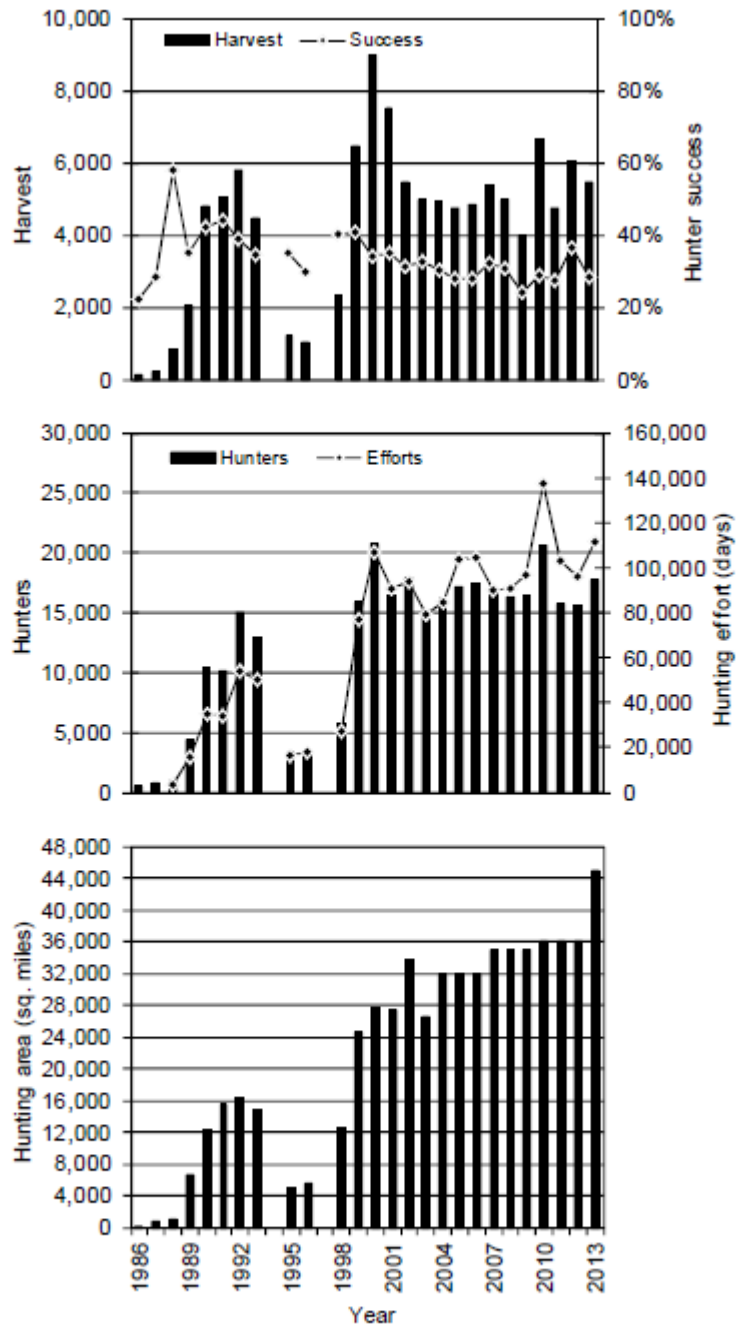


Figure 5. Number of hunters, hunting efforts (days), harvest, hunting success, and hunting area during the fall turkey hunting season, 1986-2013. Turkeys were not hunted during the fall in 1994 and 1997.

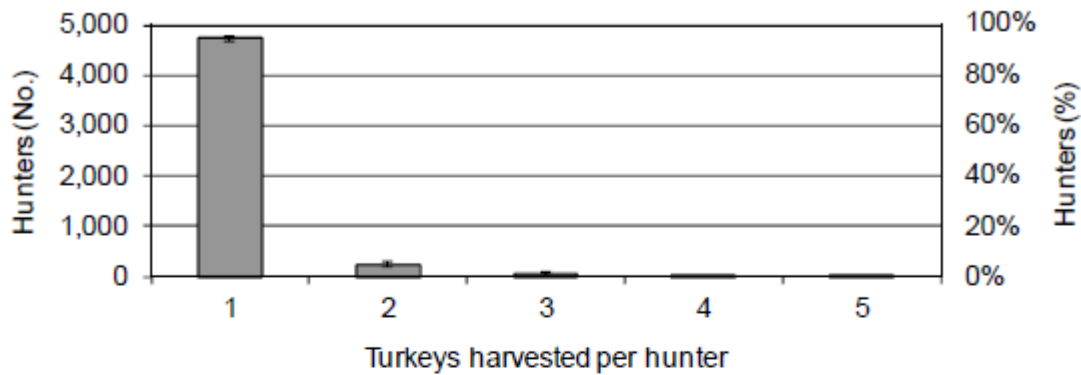


Figure 6. Number of turkeys harvested per successful hunter in Michigan during the 2013 fall hunting season.

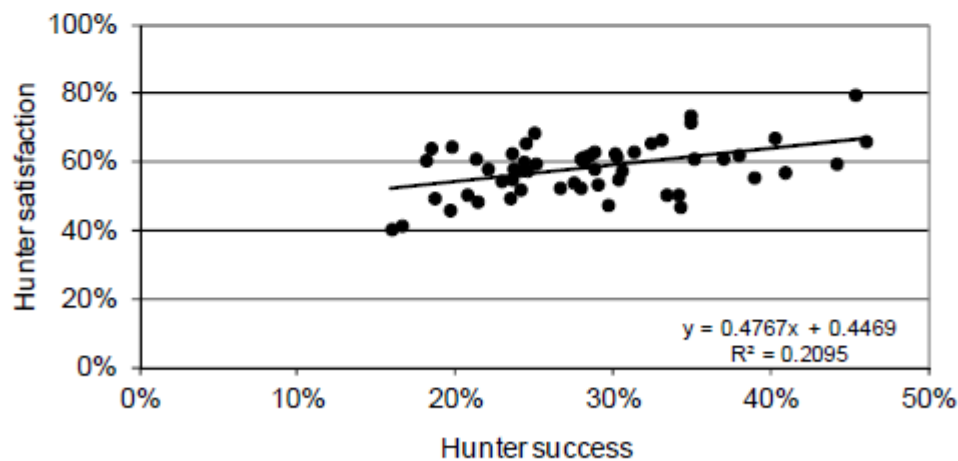


Figure 7. Hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) associated with hunter success for each of 55 counties in Michigan during the 2013 fall turkey hunting season (only included counties with at least 20 hunters).

Table 1. Number of hunting licenses available and people applying for licenses during the 2013 Michigan fall turkey hunting season.

Management unit	Hunt	Licenses available (quota) ^a	Number of eligible applicants	Number of applicants successful in drawing	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants	Number of leftover licenses purchased by applicants	Number of leftover licenses purchased by people not in the drawing	Licenses sold
G	401	200	316	200	0	127	0	0	127
GB	402	250	338	250	0	143	0	0	143
GC	403	200	861	200	0	133	0	0	133
HA ^b	410	1,700	1,166	1,166	534	720	67	406	1,193
J	404	1,500	778	778	722	463	70	499	1,032
L	405	1,000	635	635	365	424	51	264	739
M	406	1,500	691	691	809	434	62	692	1,188
T	407	200	304	200	0	125	0	0	125
W	408	200	141	141	59	71	4	44	119
WA	409	100	105	100	0	48	0	0	48
YY ^b	501	45,000	0	0	45,000	254	243	16,136	16,633
Pure MI ^c	NA ^c	NA	0	0	NA	0	0	0	3
MYH ^d	Any	NA	0	0	NA	0	0	0	11,830
Statewide	All	51,850	5,335	4,361	47,489	2,942	497	18,041	33,313

^aQuotas were assigned by hunts within each management unit.

^bLicenses were valid on private lands only.

^cPure Michigan Hunt. These hunters could hunt in any management unit.

^dMentored Youth Hunts. These hunters could hunt in any management unit.

Table 2. Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2013 Michigan fall turkey hunting season, summarized for hunters that obtained a Mentored Youth Hunt license.

Hunters		Hunting efforts (days)		Harvest		Hunter success		Hunter satisfaction ^a	
Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
2,185	188	8,785	1,063	352	84	16	3	67	5

^aProportion of hunters that rated their hunting experience as excellent, very good, or good.

Table 3. Number of hunters during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	Total	95% CL	Total	95% CL	Total	95% CL	Total ^a	95% CL
G								
401	36	6	61	7	0	0	87	5
501 ^b	1,191	118	0	0	0	0	1,191	118
MYH ^c	173	58	12	16	0	0	180	59
Multiple ^d	40	4	12	2	0	0	49	4
Subtotal	1,440	132	85	17	0	0	1,506	132
GB								
402	67	9	47	9	0	0	106	7
501 ^b	889	103	0	0	0	0	889	103
MYH ^c	192	61	6	11	0	0	198	62
Multiple ^d	49	5	7	3	0	0	54	5
Subtotal	1,196	121	61	14	0	0	1,247	121
GC								
403	46	7	48	7	4	3	92	6
501 ^b	2,532	164	0	0	0	0	2,532	164
MYH ^c	279	74	6	11	6	11	291	75
Multiple ^d	79	4	8	2	0	0	85	4
Subtotal	2,936	180	62	13	10	11	3,001	181
HA								
410 ^b	816	24	0	0	0	0	816	24
MYH ^c	155	55	0	0	0	0	155	55
Multiple ^d	66	4	0	0	0	0	66	4
Subtotal	1,038	61	0	0	0	0	1,038	61
J								
404	508	37	211	31	3	4	668	33
501 ^b	4	7	0	0	0	0	4	7
MYH ^c	81	40	12	16	0	0	87	41
Multiple ^d	30	3	9	1	0	0	37	4
Subtotal	623	55	233	35	3	4	796	54
L								
405	288	21	246	21	2	2	486	17
501 ^b	2,364	159	0	0	0	0	2,364	159
MYH	235	68	31	25	0	0	254	70
Multiple ^e	105	6	26	3	0	0	124	6
Subtotal	2,993	175	303	32	2	2	3,228	175

^aNumber of hunters may not add up to total because hunters could hunt on both private and public lands.

^bLicenses were valid on private lands only.

^cMentored Youth Hunts.

^dHunters that purchased multiple hunting licenses for multiple hunting areas.

^eIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^fHunting activity occurred at unknown location within Management Unit YY.

Table 3 (continued). Number of hunters during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	Total	95% CL	Total	95% CL	Total	95% CL	Total ^a	95% CL
M								
406	554	32	356	31	10	6	791	28
MYH ^c	105	46	25	22	6	11	136	52
Multiple ^d	25	3	13	2	0	0	32	4
Subtotal	684	56	393	38	16	13	959	59
T								
407	52	7	50	7	1	2	93	5
501 ^b	1,372	126	0	0	0	0	1,372	126
MYH ^c	211	64	19	19	0	0	217	65
Multiple ^d	55	4	5	2	0	0	57	4
Subtotal	1,689	142	73	21	1	2	1,739	142
W								
408	61	6	21	5	0	0	75	6
501 ^b	526	80	0	0	0	0	526	80
MYH ^c	74	38	6	11	6	11	87	41
Multiple ^d	21	2	1	0	0	0	22	2
Subtotal	682	89	28	12	6	11	709	91
WA								
409	24	4	13	4	0	0	37	3
501 ^b	522	80	0	0	0	0	522	80
MYH ^c	105	46	12	16	0	0	111	47
Multiple ^d	23	2	0	0	0	0	23	2
Subtotal	675	92	25	16	0	0	694	93
Eastern YY^e								
501 ^b	2,053	150	0	0	0	0	2,053	150
MYH ^c	291	75	0	0	0	0	291	75
Multiple ^d	85	4	0	0	0	0	85	4
Subtotal	2,429	168	0	0	0	0	2,429	168
Unknown YY^f								
501 ^b	569	84	0	0	0	0	569	84
MYH ^c	192	61	19	19	0	0	204	63
Multiple ^d	17	2	1	1	0	0	17	2
Subtotal	778	104	20	19	0	0	791	105
Statewide								
Total	16,780	268	1,281	74	39	21	17,761	269

^aNumber of hunters may not add up to total because hunters could hunt on both private and public lands.

^bLicenses were valid on private lands only.

^cMentored Youth Hunts.

^dHunters that purchased multiple hunting licenses for multiple hunting areas.

^eIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^fHunting activity occurred at unknown location within Management Unit YY.

Table 4. Days of hunting effort during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	Total	95% CL	Total	95% CL	Total	95% CL	Total ^a	95% CL
G								
401	166	39	362	68	0	0	527	68
501 ^b	8,498	1,250	0	0	0	0	8,498	1,250
MYH ^c	657	253	50	70	0	0	706	273
Multiple ^d	234	35	50	19	0	0	284	47
Subtotal	9,554	1,276	462	100	0	0	10,016	1,282
GB								
402	482	90	283	76	0	0	765	98
501 ^b	5,940	952	0	0	0	0	5,940	952
MYH ^c	1,059	506	12	22	0	0	1,071	506
Multiple ^d	312	51	42	25	0	0	354	59
Subtotal	7,793	1,083	338	83	0	0	8,131	1,084
GC								
403	179	33	266	64	45	27	490	68
501 ^b	15,556	1,426	0	0	0	0	15,556	1,426
MYH ^c	991	357	25	44	6	11	1,022	359
Multiple ^d	532	44	35	14	0	0	567	45
Subtotal	17,258	1,471	325	79	51	29	17,634	1,473
HA								
410 ^e	5,004	334	0	0	0	0	5,004	334
MYH ^c	514	223	0	0	0	0	514	223
Multiple ^d	330	26	0	0	0	0	330	26
Subtotal	5,849	402	0	0	0	0	5,849	402
J								
404	2,483	290	978	190	13	19	3,474	335
501 ^b	13	22	0	0	0	0	13	22
MYH ^c	223	143	43	60	0	0	266	170
Multiple ^d	130	6	38	1	0	0	168	6
Subtotal	2,848	324	1,060	199	13	19	3,921	377
L								
405	1,926	238	1,678	221	7	9	3,611	296
501 ^b	17,178	1,626	0	0	0	0	17,178	1,626
MYH	1,003	426	105	95	0	0	1,109	440
Multiple ^c	900	90	167	33	0	0	1,067	95
Subtotal	21,007	1,700	1,950	243	7	9	22,964	1,713

^aColumn and row totals for hunting effort may not equal statewide totals because of rounding errors.

^bLicenses were valid on private lands only.

^cMentored Youth Hunts.

^dHunters that purchased multiple hunting licenses for multiple hunting areas.

^eIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^fHunting activity occurred at unknown location within Management Unit YY.

Table 4 (continued). Days of hunting effort during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	Total	95% CL	Total	95% CL	Total	95% CL	Total ^a	95% CL
M								
406	3,302	339	2,205	273	35	25	5,541	431
MYH ^c	446	219	111	124	19	33	576	254
Multiple ^d	147	18	98	18	0	0	245	25
Subtotal	3,894	404	2,415	301	53	42	6,362	501
T								
407	228	49	343	89	22	25	593	90
501 ^b	8,283	1,069	0	0	0	0	8,283	1,069
MYH ^c	879	369	50	52	0	0	929	375
Multiple ^d	317	39	23	3	0	0	340	39
Subtotal	9,708	1,133	415	103	22	25	10,145	1,137
W								
408	301	53	165	58	0	0	466	75
501 ^b	3,089	630	0	0	0	0	3,089	630
MYH ^c	285	179	31	56	6	11	322	188
Multiple ^d	122	3	4	0	0	0	126	3
Subtotal	3,796	657	200	80	6	11	4,003	662
WA								
409	142	37	76	29	0	0	219	37
501 ^b	3,606	729	0	0	0	0	3,606	729
MYH ^c	359	172	50	65	0	0	409	200
Multiple ^d	152	3	0	0	0	0	152	3
Subtotal	4,260	750	126	71	0	0	4,386	757
Eastern YY^e								
501 ^b	12,471	1,270	0	0	0	0	12,471	1,270
MYH ^c	1,202	399	0	0	0	0	1,202	399
Multiple ^d	529	46	0	0	0	0	529	46
Subtotal	14,202	1,331	0	0	0	0	14,202	1,331
Unknown YY^f								
501 ^b	3,102	630	0	0	0	0	3,102	630
MYH ^c	526	203	105	124	0	0	632	246
Multiple ^d	64	8	4	4	0	0	68	9
Subtotal	3,692	662	109	124	0	0	3,801	677
Statewide								
Total ^a	103,862	2,954	7,400	499	152	61	111,414	2,992

^aColumn and row totals for hunting effort may not equal statewide totals because of rounding errors.

^bLicenses were valid on private lands only.

^cMentored Youth Hunts.

^dHunters that purchased multiple hunting licenses for multiple hunting areas.

^eIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^fHunting activity occurred at unknown location within Management Unit YY.

Table 5. Hunting success (proportion of hunters taking at least one turkey) during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	%	95% CL	%	95% CL	%	95% CL	% ^a	95% CL
G								
401	24	9	14	6	0	0	20	6
501 ^a	26	5	0	0	0	0	26	5
MYH ^b	11	10	0	0	0	0	10	10
Multiple ^c	40	5	17	3	0	0	36	4
Subtotal	25	4	13	5	0	0	24	4
GB								
402	7	5	14	8	0	0	11	5
501 ^a	30	5	0	0	0	0	30	5
MYH ^b	19	13	0	0	0	0	19	12
Multiple ^c	44	5	31	15	0	0	41	5
Subtotal	27	5	14	7	0	0	27	4
GC								
403	15	7	15	6	0	0	15	5
501 ^a	29	3	0	0	0	0	29	3
MYH ^b	16	10	0	0	100	0	17	10
Multiple ^c	34	3	16	13	0	0	33	3
Subtotal	28	3	13	6	60	46	28	3
HA								
410 ^b	27	3	0	0	0	0	27	3
MYH ^b	12	12	0	0	0	0	12	12
Multiple ^c	43	4	0	0	0	0	43	4
Subtotal	26	3	0	0	0	0	26	3
J								
404	30	5	14	6	0	0	26	4
501 ^a	100	0	0	0	0	0	100	0
MYH ^b	8	13	50	63	0	0	14	17
Multiple ^c	33	6	22	3	0	0	33	5
Subtotal	27	5	17	7	0	0	26	4
L								
405	21	4	15	4	0	0	20	3
501 ^a	27	3	0	0	0	0	27	3
MYH ^b	8	8	0	0	0	0	7	7
Multiple ^c	39	3	20	4	0	0	37	3
Subtotal	25	3	14	3	0	0	25	3

^aLicenses were valid on private lands only.

^bMentored Youth Hunts.

^cHunters that purchased multiple hunting licenses for multiple hunting areas.

^dIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^eHunting activity occurred at unknown location within Management Unit YY.

Table 5 (continued). Hunting success (proportion of hunters taking at least one turkey) during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	%	95% CL	%	95% CL	%	95% CL	% ^a	95% CL
M								
406	40	4	29	5	20	25	41	3
MYH ^b	35	21	0	0	0	0	27	17
Multiple ^c	43	6	52	9	0	0	55	6
Subtotal	39	5	28	5	12	18	39	4
T								
407	31	9	12	6	100	0	25	6
501 ^a	37	5	0	0	0	0	37	5
MYH ^b	12	10	33	49	0	0	14	11
Multiple ^c	38	4	28	20	0	0	39	4
Subtotal	34	4	18	14	100	0	33	4
W								
408	27	7	13	9	0	0	26	6
501 ^a	33	7	0	0	0	0	33	7
MYH ^b	50	26	0	0	0	0	43	24
Multiple ^c	31	4	0	0	0	0	29	4
Subtotal	34	6	10	8	0	0	33	6
WA								
409	18	10	11	12	0	0	15	8
501 ^a	36	7	0	0	0	0	36	7
MYH ^b	18	17	0	0	0	0	17	16
Multiple ^c	23	4	0	0	0	0	23	4
Subtotal	32	6	6	7	0	0	31	6
Eastern YY^d								
501 ^a	29	4	0	0	0	0	29	4
MYH ^b	19	10	0	0	0	0	19	10
Multiple ^c	36	2	0	0	0	0	36	2
Subtotal	28	3	0	0	0	0	28	3
Unknown YY^e								
501 ^a	24	6	0	0	0	0	24	6
MYH ^b	3	6	0	0	0	0	3	5
Multiple ^c	37	6	0	0	0	0	37	6
Subtotal	19	5	0	0	0	0	19	5
Statewide								
Total	29	1	19	2	25	25	28	1

^aLicenses were valid on private lands only.^bMentored Youth Hunts.^cHunters that purchased multiple hunting licenses for multiple hunting areas.^dIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.^eHunting activity occurred at unknown location within Management Unit YY.

Table 6. Number of turkeys harvested during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	Total	95% CL	Total	95% CL	Total	95% CL	Total ^a	95% CL
G								
401	9	4	9	4	0	0	17	5
501 ^b	332	68	0	0	0	0	332	68
MYH ^c	19	19	0	0	0	0	19	19
Multiple ^d	18	4	2	0	0	0	20	4
Subtotal	378	71	11	4	0	0	389	71
GB								
402	5	3	7	4	0	0	11	5
501 ^b	276	62	0	0	0	0	276	62
MYH ^c	37	27	0	0	0	0	37	27
Multiple ^d	28	6	2	1	0	0	30	7
Subtotal	346	68	9	4	0	0	355	69
GC								
403	7	3	7	3	0	0	14	4
501 ^b	807	110	0	0	0	0	807	110
MYH ^c	43	29	0	0	6	11	50	31
Multiple ^d	28	4	1	1	0	0	29	4
Subtotal	885	114	8	3	6	11	900	115
HA								
410 ^b	236	28	0	0	0	0	236	28
MYH ^c	19	19	0	0	0	0	19	19
Multiple ^d	30	4	0	0	0	0	30	4
Subtotal	285	34	0	0	0	0	285	34
J								
404	165	32	30	13	0	0	196	35
501 ^b	4	7	0	0	0	0	4	7
MYH ^c	6	11	6	11	0	0	12	16
Multiple ^d	10	2	2	0	0	0	12	2
Subtotal	186	35	39	17	0	0	224	39
L								
405	61	13	38	11	0	0	100	16
501 ^b	712	110	0	0	0	0	712	110
MYH	19	19	0	0	0	0	19	19
Multiple ^e	50	7	5	1	0	0	55	7
Subtotal	842	112	44	11	0	0	885	113

^aColumn and row totals for hunting effort may not equal statewide totals because of rounding errors.

^bLicenses were valid on private lands only.

^cMentored Youth Hunts.

^dHunters that purchased multiple hunting licenses for multiple hunting areas.

^eIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^fHunting activity occurred at unknown location within Management Unit YY.

Table 6 (continued). Number of turkeys harvested during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	Total	95% CL	Total	95% CL	Total	95% CL	Total ^a	95% CL
M								
406	233	29	114	23	2	3	349	35
MYH ^c	37	27	0	0	0	0	37	27
Multiple ^d	11	2	7	2	0	0	18	3
Subtotal	281	40	121	23	2	3	404	44
T								
407	16	5	6	3	1	2	24	6
501 ^b	552	90	0	0	0	0	552	90
MYH ^c	31	29	6	11	0	0	37	31
Multiple ^d	24	4	1	1	0	0	25	4
Subtotal	623	95	13	12	1	2	638	96
W								
408	17	5	3	2	0	0	19	5
501 ^b	181	50	0	0	0	0	181	50
MYH ^c	37	27	0	0	0	0	37	27
Multiple ^d	6	1	0	0	0	0	6	1
Subtotal	241	57	3	2	0	0	244	57
WA								
409	4	3	1	2	0	0	6	3
501 ^b	198	53	0	0	0	0	198	53
MYH ^c	19	19	0	0	0	0	19	19
Multiple ^d	5	1	0	0	0	0	5	1
Subtotal	227	57	1	2	0	0	228	57
Eastern YY^e								
501 ^b	634	94	0	0	0	0	634	94
MYH ^c	56	33	0	0	0	0	56	33
Multiple ^d	32	3	0	0	0	0	32	3
Subtotal	722	100	0	0	0	0	722	100
Unknown YY^f								
501 ^b	142	44	0	0	0	0	142	44
MYH ^c	6	11	0	0	0	0	6	11
Multiple ^d	8	2	0	0	0	0	8	2
Subtotal	156	45	0	0	0	0	156	45
Statewide								
Total ^a	5,171	237	249	34	10	12	5,430	240

^aColumn and row totals for hunting effort may not equal statewide totals because of rounding errors.

^bLicenses were valid on private lands only.

^cMentored Youth Hunts.

^dHunters that purchased multiple hunting licenses for multiple hunting areas.

^eIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^fHunting activity occurred at unknown location within Management Unit YY.

Table 7. Proportion of hunters that rated their hunting experience as excellent, very good, or good during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	%	95% CL	%	95% CL	%	95% CL	% ^a	95% CL
G								
401	56	11	67	8	0	0	62	7
501 ^a	57	5	0	0	0	0	57	5
MYH ^b	71	15	50	63	0	0	72	15
Multiple ^c	68	4	81	9	0	0	72	4
Subtotal	59	5	66	11	0	0	60	4
GB								
402	46	10	38	11	0	0	43	8
501 ^a	61	6	0	0	0	0	61	6
MYH ^b	68	15	100	0	0	0	69	15
Multiple ^c	77	4	83	15	0	0	77	4
Subtotal	62	5	50	13	0	0	61	5
GC								
403	52	9	50	9	33	29	52	6
501 ^a	62	3	0	0	0	0	62	3
MYH ^b	64	13	100	0	100	0	66	12
Multiple ^c	78	2	71	13	0	0	77	2
Subtotal	62	3	58	10	73	33	62	3
HA								
410 ^b	53	3	0	0	0	0	53	3
MYH ^b	80	14	0	0	0	0	80	14
Multiple ^c	70	3	0	0	0	0	70	3
Subtotal	58	4	0	0	0	0	58	4
J								
404	52	5	44	8	100	0	50	5
501 ^a	100	0	0	0	0	0	100	0
MYH ^b	54	25	50	63	0	0	57	24
Multiple ^c	63	5	46	7	0	0	64	4
Subtotal	53	5	44	8	100	0	51	5
L								
405	57	5	50	5	0	0	53	4
501 ^a	54	4	0	0	0	0	54	4
MYH ^b	47	15	20	32	0	0	46	14
Multiple ^c	70	3	67	6	0	0	68	3
Subtotal	54	3	48	6	0	0	54	3

^aLicenses were valid on private lands only.

^bMentored Youth Hunts.

^cHunters that purchased multiple hunting licenses for multiple hunting areas.

^dIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^eHunting activity occurred at unknown location within Management Unit YY.

Table 7 (continued). Proportion of hunters that rated their hunting experience as excellent, very good, or good during the 2013 Michigan fall turkey hunting season.

Area and hunting license	Land type							
	Private		Public		Unknown		All land types	
	%	95% CL	%	95% CL	%	95% CL	% ^a	95% CL
M								
406	59	4	49	5	40	31	57	4
MYH ^b	65	21	75	39	100	0	68	18
Multiple ^c	74	6	75	8	0	0	76	6
Subtotal	60	5	51	6	63	33	59	4
T								
407	60	9	47	10	100	0	52	7
501 ^a	63	5	0	0	0	0	63	5
MYH ^b	71	14	33	49	0	0	69	14
Multiple ^c	64	4	100	0	0	0	65	4
Subtotal	64	4	47	15	100	0	63	4
W								
408	43	8	60	13	0	0	46	7
501 ^a	61	8	0	0	0	0	61	8
MYH ^b	75	22	100	0	100	0	79	20
Multiple ^c	56	4	0	0	0	0	54	4
Subtotal	61	6	67	16	100	0	62	6
WA								
409	41	13	56	18	0	0	46	11
501 ^a	58	8	0	0	0	0	58	8
MYH ^b	59	21	0	0	0	0	56	21
Multiple ^c	74	2	0	0	0	0	74	2
Subtotal	58	7	28	20	0	0	57	7
Eastern YY^d								
501 ^a	57	4	0	0	0	0	57	4
MYH ^b	66	12	0	0	0	0	66	12
Multiple ^c	71	2	0	0	0	0	71	2
Subtotal	58	4	0	0	0	0	58	4
Unknown YY^e								
501 ^a	47	7	0	0	0	0	47	7
MYH ^b	77	13	67	49	0	0	76	13
Multiple ^c	53	7	0	0	0	0	53	7
Subtotal	55	7	62	46	0	0	55	7
Statewide								
Total	59	1	50	3	72	18	59	1

^aLicenses were valid on private lands only.

^bMentored Youth Hunts.

^cHunters that purchased multiple hunting licenses for multiple hunting areas.

^dIncluded Genesee, Lapeer, Macomb, Oakland, and St. Clair counties within Management Unit YY.

^eHunting activity occurred at unknown location within Management Unit YY.

Table 8. Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2013 Michigan fall turkey hunting season, summarized by county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
Alger	57	17	306	129	16	7	28	12	53	15
Allegan	539	72	3,475	640	123	38	21	5	51	7
Antrim	219	38	1,134	247	60	22	23	7	55	9
Baraga	37	19	217	93	14	12	39	25	56	25
Barry	503	71	2,960	511	120	54	20	6	46	7
Bay	113	36	778	303	39	21	35	15	71	14
Berrien	333	59	3,004	692	90	32	27	8	53	9
Branch	225	54	1,254	387	65	33	25	10	69	11
Calhoun	452	76	2,969	686	128	46	24	7	60	8
Cass	311	58	2,529	653	82	36	21	8	49	9
Charlevoix	153	35	572	152	50	20	32	11	66	11
Cheboygan	140	31	610	159	55	23	34	11	50	12
Chippewa	55	17	323	107	25	14	45	16	80	11
Clinton	229	55	1,296	443	49	23	21	9	61	12
Delta	135	24	672	178	57	15	41	9	57	9
Dickinson	120	25	732	174	47	15	34	9	47	11
Eaton	395	71	2,573	617	87	33	22	7	58	9
Emmet	99	25	459	150	24	12	24	10	52	13
Genesee	480	79	2,787	597	165	48	33	8	51	8
Gogebic	53	14	352	111	28	12	44	13	60	13
Gratiot	302	62	2,233	641	116	45	31	9	63	10

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

Table 8 (continued). Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2013 Michigan fall turkey hunting season, summarized by county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
Hillsdale	321	64	1,582	407	92	34	29	9	62	10
Houghton	49	22	287	128	8	6	17	12	42	22
Huron	466	76	2,502	565	149	44	30	7	62	8
Ingham	437	73	2,475	566	138	43	31	8	57	8
Ionia	238	54	1,459	499	45	22	18	9	64	11
Iron	188	34	1,088	206	82	22	38	9	62	9
Isabella	330	63	1,796	448	93	34	28	9	62	9
Jackson	589	86	3,335	642	144	43	25	6	66	7
Kalamazoo	410	70	2,602	574	119	37	29	8	58	8
Kent	583	86	3,815	784	142	43	24	6	63	7
Keweenaw	2	3	20	29	0	0	0	0	0	0
Lapeer	744	96	4,366	771	227	58	28	6	60	6
Lenawee	446	76	2,356	547	93	35	20	7	65	8
Livingston	489	77	3,238	700	123	39	24	7	57	8
Luce	0	0	0	0	0	0	0	0	0	0
Mackinac	11	6	101	82	0	0	0	0	55	28
Macomb	243	56	1,306	368	62	31	24	10	58	11
Marquette	68	21	440	160	14	9	18	10	61	14
Mecosta	232	33	1,129	192	48	14	19	5	50	8
Menominee	170	33	1,098	264	71	22	40	10	67	9
Midland	381	67	2,186	492	150	46	37	9	61	9

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

Table 8 (continued). Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2013 Michigan fall turkey hunting season, summarized by county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
Montcalm	360	65	2,358	630	86	32	24	8	55	9
Muskegon	254	55	1,443	421	86	37	29	10	53	11
Newaygo	497	53	3,032	356	154	28	30	5	62	5
Oakland	385	71	2,186	545	109	35	28	8	61	9
Oceana	204	33	1,053	185	54	15	25	6	58	8
Ontonagon	58	20	433	189	27	14	46	18	66	15
Otsego	172	31	806	196	27	12	16	6	40	9
Ottawa	422	71	2,800	630	125	39	29	8	63	8
Saginaw	579	86	3,566	696	189	53	30	7	55	8
St. Clair	601	88	3,557	695	160	49	25	6	59	7
St. Joseph	225	50	1,559	469	68	29	28	10	54	11
Sanilac	664	92	3,634	656	250	63	33	7	67	7
Schoolcraft	16	8	95	88	7	5	48	24	48	24
Shiawassee	333	66	1,965	518	112	43	30	9	50	10
Tuscola	624	87	3,943	758	236	58	35	7	61	7
Van Buren	354	64	2,304	543	86	30	23	8	50	9
Washtenaw	465	74	2,635	574	198	63	35	8	73	7
Unknown	1,124	110	5,630	725	215	47	19	4	54	5

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

Minnesota's Wild Turkey Harvest – 2014

Steve Merchant

This report summarizes the fall 2013 and spring 2014 wild turkey harvest information. The fall turkey season was 30 days in length (September 28 - October 27) and allowed for an unlimited number of hunters to take one wild turkey of either sex. The spring turkey season regulated harvest and distributed hunting pressure by allocating permits across 12 permit areas (PAs; Figure 1) and 8 time periods using a quota system for the first 3 time periods. During spring, adult hunters interested in pursuing turkeys for the first 3 time periods were required to apply for a permit through a lottery system, but youth hunters were able purchase a permit over-the-counter and hunt in any permit area. Preference for this lottery system was determined by the number of years a valid but unsuccessful application had been submitted since last receiving a permit. Hunters could apply individually or in a group of up to 4 hunters. Successful applicants were notified through U.S. mail and unsuccessful applicants were awarded a preference point. Hunters could simply purchase a permit for the last 5 seasons. Persons with an archery turkey license could hunt the last 5 time periods in their entirety. The goal of this system was to provide quality turkey hunting opportunities by managing hunter interference rates while allowing hunters to take the harvestable surplus of turkeys.

Fall 2013 Turkey Season – The number of permits issued to hunters declined from 10,779 permits in 2012 to 8,193 in 2013 (Table 1, Figure 2). Hunters still needed to select and hunt within one of the twelve permit areas. There were 1,078 turkeys harvested during Fall 2013, which was a 38 percent decline from 2012 (Table 1). Hunter success rates averaged 13.2%, which was below the 5-year average (18%). Fewer hunters contributed in part to the lower harvest, however the lower hunter success rates are likely due to fewer hatch-year turkeys in the population, and perhaps a lower total turkey population due to 2 consecutive years of inclement weather during the nesting/brood periods.

Spring 2014 Turkey Season – There were 48,204 permits issued during the spring season, including 14,003 general/landowner permits, 12,179 youth permits, 4,899 archery permits, and 17,123 surplus permits (Table 6). Hunters registered 11,447 turkeys (Table 3 and 5), which was the third highest harvest recorded and near the 5-year average (Figure 3). Success rates by license type are found in Table 6. The winter of 2013-14 saw deep snow and extreme cold in portions of the turkey range. The impact of the extended winter weather on turkey populations is unknown, but some winter losses were reported. For the second year in a row, snow remained on the ground during the first or second seasons in some portions of the turkey range, and it is again reasonable to believe that the weather likely affected hunter effort and turkey activity.

Table 1. Permits available and issued, applicants, registered harvest, and hunter success rates for fall wild turkey hunting seasons in Minnesota, 1990 – 2013.

Year	Permits available	Applicants	Permits issued	Registered harvest	Hunter success (%) ^a
1990	1,000	4,522	951	326	34
1991	2,200	2,990	2,020	552	27
1992	2,200	2,782	2,028	588	29
1993	2,400	3,186	2,094	605	29
1994	2,500	3,124	2,106	601	29
1995	2,500	3,685	2,125	648	30
1996	2,500	4,453	2,289	685	30
1997	2,580	4,574	2,378	698	29
1998	2,710	4,526	2,483	828	33
1999	2,890	5,354	2,644	865	33
2000	3,090	5,263	2,484	735	30
2001	2,870	4,501	2,262	629	28
2002	3,790	5,180	2,945	594	20
2003	3,870	5,264	2,977	889	30
2004	4,380	5,878	3,277	758	23
2005	4,410	4,542	2,978	681	23
2006	4,290	4,167	2,802	618	22
2007	4,490	4,464	2,837	695	24
2008	7,560	5,834	4,981	1,187	24
2009	9,330	7,738	5,019	1,163	23
2010	10,430	6,869	6,607	1,353	20
2011	10,430	3,538	5,382	953	18
2012	Unlimited	N/A	10,779	1,753	16
2013	Unlimited	N/A	8,193	1,078	13

^aSuccess rates not adjusted for non-participation.

Table 2. Permits issued, registered harvest, and hunter success during the spring 2014 wild turkey season, Minnesota.

Permit Area	Regular Permits Issued ^a	Total Harvest	Success (%) ^b
501	8,319	3,084	37
502	706	236	33
503	3,545	1,313	37
504	794	315	40
505	2,864	1,033	36
506	1,114	398	36
507	7,898	2,875	36
508	3,463	1,140	33
509	222	106	48
510	2,404	903	38
511	124	36	29
512	39	8	21

^a Permits issued for the Camp Ripley disabled veterans hunt, archery, and youth permits were not included.

^b Success rates were not adjusted for non-participation and do not include youth or archery licenses.

Table 3. Permits available, permits issued, and registered harvest for spring wild turkey hunting seasons in Minnesota, 1978 – 2014.

Year	Permits			Registered Harvest	Success (%) ^a
	Available	Issued	Issued (%)		
1978	420	411	97.9	94	23
1979	840	827	98.5	116	14
1980	1,200	1,191	99.3	98	8
1981	1,500	1,437	95.8	113	8
1982	2,000	1,992	99.6	106	5
1983	2,100	2,079	99.0	116	6
1984	3,000	2,837	94.6	178	6
1985	2,750	2,449	89.1	323	13
1986	2,500	2,251	90.0	333	15
1987	2,700	2,520	93.3	520	21
1988	3,000	2,994	99.8	674	23
1989	4,000	3,821	95.5	930	24
1990	6,600	6,126	92.8	1,709	28
1991	9,170	8,607	93.9	1,724	20
1992	9,310	9,051	97.2	1,691	19
1993	9,625	9,265	96.3	2,082	23
1994	9,940	9,479	95.4	1,975	21
1995	9,975	9,550	95.7	2,339	25
1996	12,131	10,983	90.5	2,841	26
1997	12,530	11,610	92.7	3,302	28
1998	14,035	13,229	94.3	4,361	33
1999	18,360	16,387	89.3	5,132	31
2000	20,160	18,661	92.6	6,154	33
2001	22,936	21,404	93.3	6,383	30
2002	24,136	22,607	93.7	6,516	29
2003	25,016	22,770	91.0	7,666	34
2004	27,600	25,261	91.5	8,434	33
2005	31,748	27,638	87.1	7,800	28
2006	32,624	27,876	85.4	8,241	30
2007 ^b	33,976	28,320	83.4	9,412	33
2008 ^b	37,992	31,942	84.1	10,994	34
2009 ^b	42,328	36,193	85.5	12,210	34
2010 ^b	55,982	46,548 ^c	83.0	13,467	29
2011 ^b	Unlimited	43,521 ^c	N/A	10,055	23
2012 ^b	Unlimited	38,906 ^c	N/A	11,325	29
2013 ^b	Unlimited	34,281 ^c	N/A	10,390	30
2014 ^b	Unlimited	43,305 ^c	N/A	11,447	25

^a Success rates not adjusted for non-participation.

^b Youth hunt data included.

^c Permits issued to archery hunters (2011 – 2,462; 2012 – 3,911; 2013 – 4,550; 2014 – 4,899) were not included.

Table 4. Permits available and issued by license type and time period for the spring 2014 wild turkey season, Minnesota.

Time Period	Permits Available	Permits issued		
		General Lottery ^a	Surplus	Youth ^b
A	5,921	4,927	4	NA
B	5,921	4,084	1,052	NA
C	5,921	4,977	3	NA
D	Unlimited	5	8,253	NA
E	Unlimited	3	2,397	NA
F	Unlimited	0	1,213	NA
G	Unlimited	1	2,777	NA
H	Unlimited	6	1,385	NA
Total ^a	Unlimited	14,003	17,123	12,179

^aIncludes landowner licenses.

^bYouth permits were good for all time periods.

Table 5. Total harvest by time-period for the spring 2014 wild turkey season, Minnesota.

Time Period	Total Harvest	Percent Harvest
A	2,631	23.0
B	2,143	18.7
C	1,701	14.9
D	2,450	21.4
E	816	7.1
F	428	3.7
G	795	6.9
H	482	4.2
Total	11,447	100

Table 6. Total permits sold, harvest and success rate by license type for the spring 2014 wild turkey season, Minnesota.

	Total Permits	Total Harvest	Success Rate
Lottery	14,003	4,769	34
Surplus	17,123	3,917	23
Youth	12,179	2,206	18
Archery	4,899	504	10
Total	48,204	11,447	24

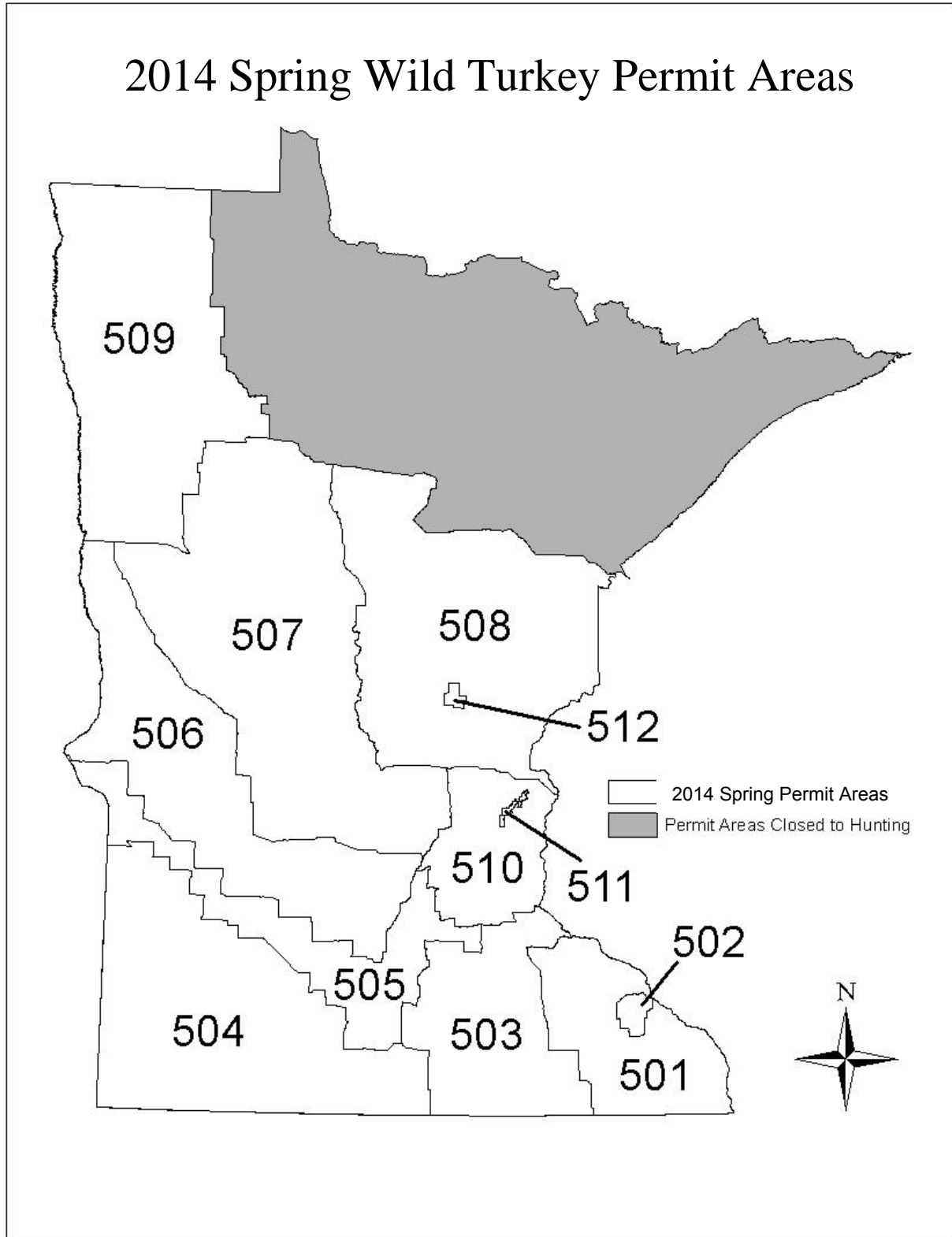


Figure 1. Permit areas open for hunting during the 2014 spring turkey hunting season, Minnesota.

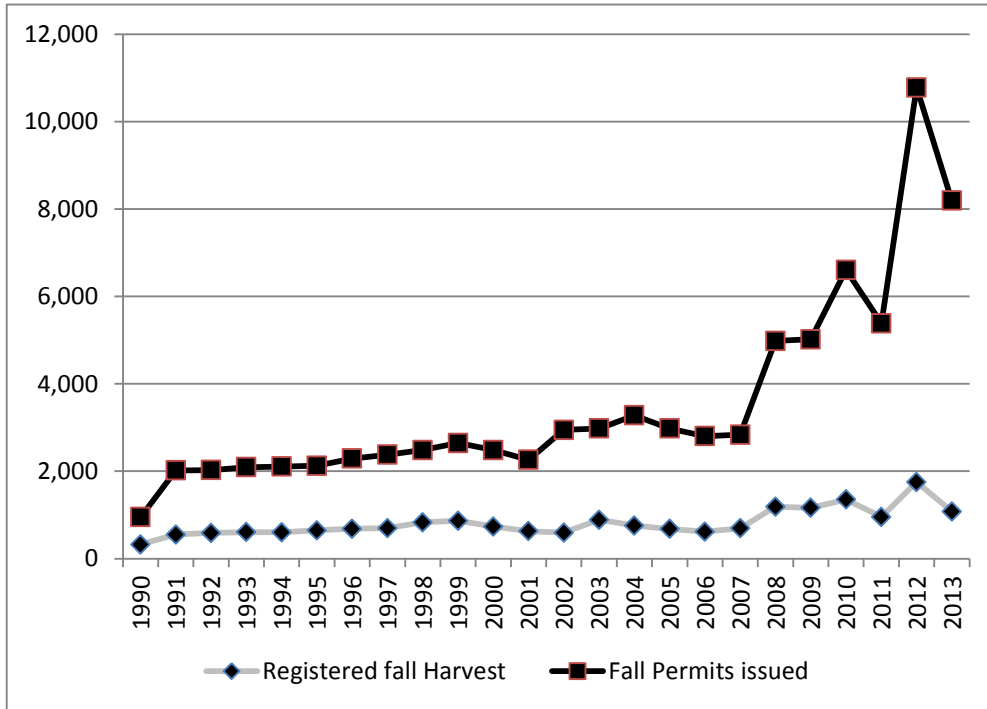


Figure 2. Permits issued and registered harvest for fall wild turkey seasons in Minnesota, 1990-2013.

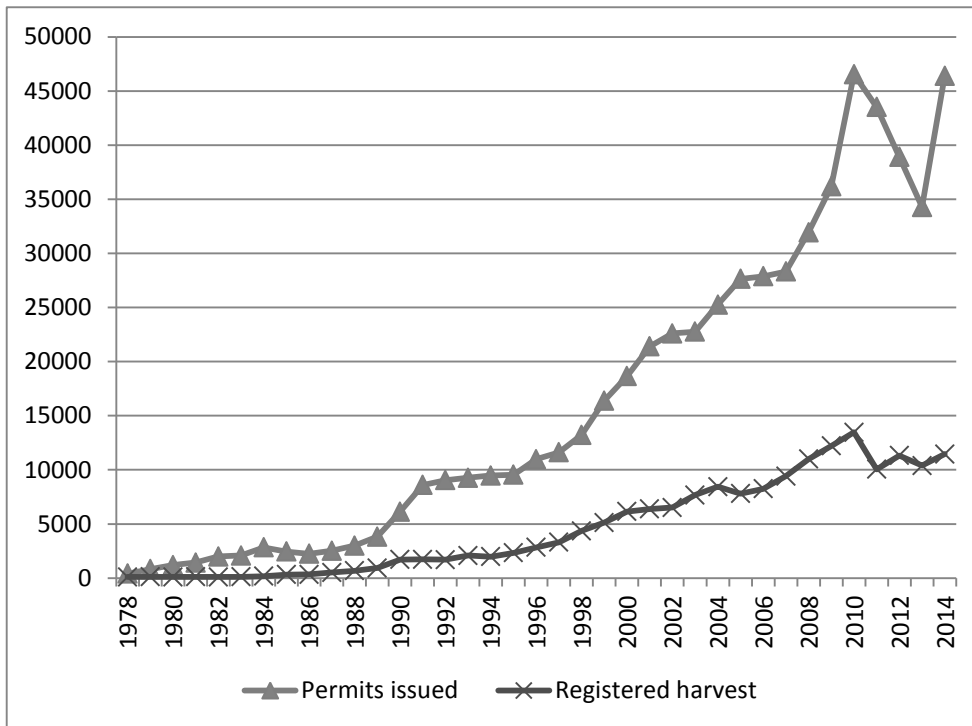


Figure 3. Permits issued and registered harvest for spring wild turkey seasons in Minnesota, 1978-2014.

MISSOURI WILDLIFE HARVEST AND POPULATION STATUS REPORT

WILD TURKEY – 2013

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POPULATION STATUS

After experiencing a considerable decline during much of the 2000s, wild turkey numbers in Missouri during the past several years have been relatively stable at the statewide scale. In most of western Missouri, the turkey population reached peak abundance in the early 2000s. Corresponding with a declining trend in turkey productivity, turkey numbers have since declined, with current numbers in the West Prairie and Northwest regions (Figure 1) remaining over 40% and 60% below numbers at the population peak, respectively. Turkey production in these regions has improved during the last several years, but regional populations have not experienced the higher production observed elsewhere in the state.

Similar to the trends observed in the Northwest and West Prairie regions, both the Northeast and Ozark Border regions of Missouri (Figure 1) have experienced substantial declines in turkey numbers since the late 1990s and early 2000s. Improved production in these regions has resulted in an increase in turkey abundance during the past several years; however, turkey numbers remain well below the peak numbers observed more than a decade ago. Turkey numbers in both regions currently range between 40-50% below peak abundance 10-15 years ago.

During the early 2000s, wild turkey populations in the Ozarks of southern Missouri experienced the same peak in abundance as northern and western populations; however, the population decline that followed was not of the same magnitude. During the past several years, wild turkey numbers throughout much of the Ozarks have been relatively stable as a result of improved turkey production. Despite improvements in production, turkey numbers in much of the Ozarks remain more than a third less than numbers observed a decade ago.

In the Lindley Breaks and Union Breaks regions of east-central and southeast Missouri (Figure 1), turkey numbers during the past several years have been relatively stable and comparable to regional numbers observed in the early 1990s. Like much of Missouri, regional numbers increased and peaked during the late 1990s and early 2000s as a result of multiple years of good production.

Despite some regional variation, Missouri's turkey population has experienced a trend of decreased abundance since the population peaks observed 10-15 years ago. This decline is a result of reduced productivity as evidenced by results of the Missouri Department of Conservation's (MDC) Wild Turkey Brood Survey (Figure 2). During 2011 and 2012, wild

turkey production improved throughout most of Missouri. Although these improved hatches represented considerable improvements from the poor hatches that plagued the state's turkey population during the late 2000s, it will take additional years of good production for the state's turkey population to rebound.

REPRODUCTION – WILD TURKEY BROOD SURVEY

The MDC has been conducting a Wild Turkey Brood Survey annually since 1959. During the survey, Department staff and citizen volunteers record observations of hens and poults (and gobblers) during June, July, and August. Turkey sightings are recorded on observation cards, which the MDC mails to participants at the beginning of each survey month. By recording observations of hens and poults, survey participants provide information that serves as an index to turkey production. It is through this survey that the MDC determines the success of each year's turkey hatch. Turkey observations are collected at the county-level and analyzed by Turkey Productivity Region (Figure 1), which are counties grouped by similar land cover composition.

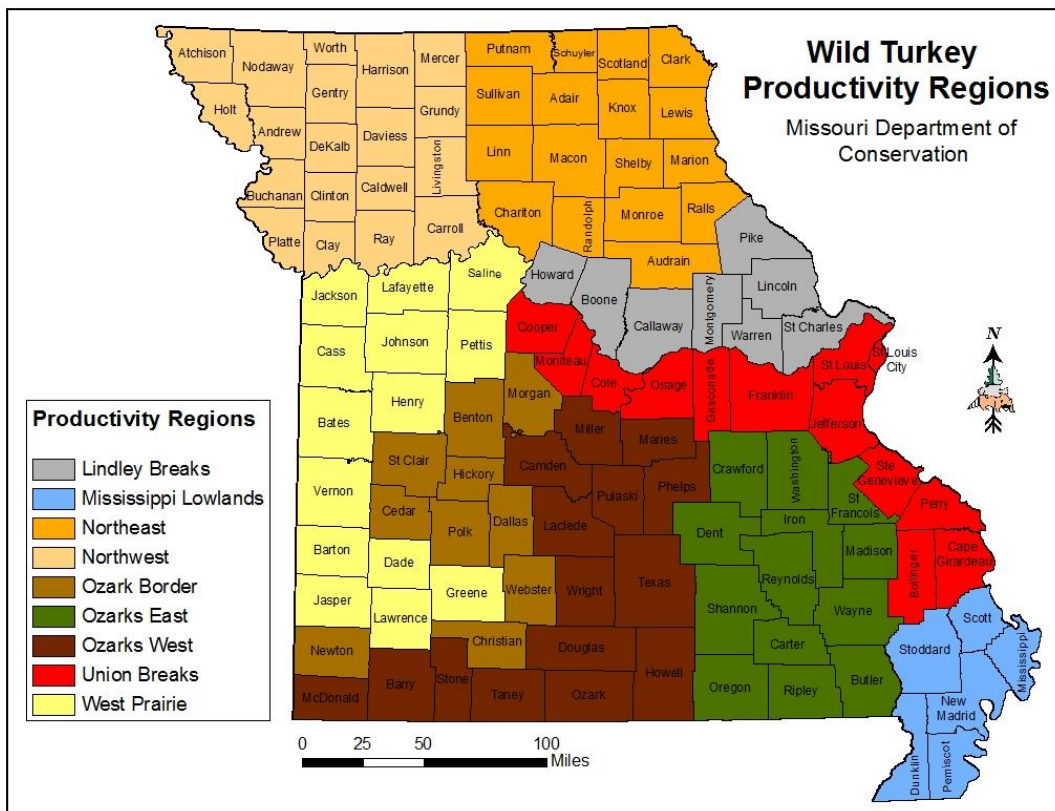


Figure 1. Turkey Productivity Regions in Missouri. Each region consists of counties grouped by similar land cover composition.

MDC staff determines the percentage of hens observed with and without poults, as well as the average number of poults per hen for those hens observed with a brood. Observations of hens and poults are also used to determine the poults-to-hen ratio. The poults-to-hen ratio includes observations of hens observed with a brood and those observed without a brood. Observations of more than 2 hens per brood are not included in poults-to-hen ratio calculations.

In 2013, MDC staff and citizen volunteers recorded observations of over 44,000 turkeys during the 3-month survey, including over 2,900 broods (Table 1). At the statewide scale, 37% of hens were observed with poults (Table 2). The percentage of hens observed with a brood ranged from 30% in the Northwest region to 43% in the Lindley Breaks region. Statewide, the average brood size was 4.1 poults (Table 2). Average brood size ranged from 3.2 poults in the Mississippi Lowlands region to 4.7 poults in the Ozarks East region.

Table 1. Wild turkey observations by Turkey Productivity Region (Figure 1). Data were obtained during Missouri's Wild Turkey Brood Survey conducted in June, July, and August, 2013.

Productivity Region	Hens w/ Broods	Hens w/o Broods	Total Hens	Poults	Broods	Gobblers
Lindley Breaks	690	929	1,619	2,652	369	1,054
Mississippi Lowlands	57	118	175	185	24	54
Northeast	688	1,111	1,799	2,984	410	1,077
Northwest	332	787	1,119	1,292	205	903
Ozark Border	486	1,091	1,577	2,019	251	1,333
Ozarks East	446	646	1,092	2,075	268	585
Ozarks West	632	1,110	1,742	2,858	393	1,524
Union Breaks	1,298	1,906	3,204	4,819	671	1,783
West Prairie	465	945	1,410	1,778	261	1,237
Statewide^a	5,156	8,701	13,857	20,914	2,906	9,601

^a Statewide totals include observations where Productivity Region could not be determined.

The 2013 statewide poult-to-hen ratio of 1.3 was 24% lower than the 2012 ratio, and 7% lower, 7% lower, and 24% lower than the 5, 10, and 20-year statewide averages, respectively (Table 3). Among Turkey Productivity Regions, poult-to-hen ratios ranged from 0.6 in the Mississippi Lowlands region to 1.7 in the Ozarks East region (Table 3).

Table 2. Wild Turkey Brood Survey data by Turkey Productivity Region (Figure 1). Data were obtained during Missouri's Wild Turkey Brood Survey conducted in June, July, and August, 2013.

Productivity Region	% Hens w/ Poults	Average Brood Size	Poult-to-Hen Ratio ^a	Gobbler-to- Hen Ratio
Lindley Breaks	43%	3.8	1.2	0.65
Mississippi Lowlands	33%	3.2	0.6	0.31
Northeast	38%	4.3	1.4	0.60
Northwest	30%	3.9	1.0	0.81
Ozark Border	31%	4.2	1.0	0.85
Ozarks East	41%	4.7	1.7	0.54
Ozarks West	36%	4.5	1.5	0.87
Union Breaks	41%	3.7	1.2	0.56
West Prairie	33%	3.8	1.0	0.88
Statewide^b	37%	4.1	1.3	0.69

^a Observations of >2 hens per brood are not included in poult-to-hen ratio calculations.

^b Statewide totals include observations where Productivity Region could not be determined.

Table 3. Index (poult-to-hen ratio^a) of Missouri turkey production by Turkey Productivity Region (Figure 1). Data were obtained from the 2013 Wild Turkey Brood Survey and are compared to previous years. For each interval value, the % change indicates how the 2013 index compares to the previous year or the average for periodic intervals.

Productivity Region	2013 Index	1-year (2012) Change	5-year (2008-2012) Change	10-year (2003-2012) Change	20-year (1993-2012) Change
Lindley Breaks	1.2	-25%	-20%	-20%	-37%
Mississippi Lowlands	0.6	-73%	-67%	-71%	-71%
Northeast	1.4	-7%	+8%	+8%	-18%
Northwest	1.0	-41%	-23%	-29%	-47%
Ozark Border	1.0	-41%	-17%	-17%	-41%
Ozarks East	1.7	-32%	0%	0%	-15%
Ozarks West	1.5	-6%	+15%	+7%	-12%
Union Breaks	1.2	-20%	-14%	-14%	-29%
West Prairie	1.0	-33%	-17%	-17%	-41%
Statewide^b	1.3	-24%	-7%	-7%	-24%

^a Observations of >2 hens per brood are not included in poult-to-hen ratio calculations.

^b Statewide totals include observations where Productivity Region could not be determined.

The highest production in 2013 occurred in portions of southeast Missouri. In general, turkey production was highest in the eastern part of the state. Turkey production was low in the Mississippi Lowlands region, and in the Northwest, West Prairie, and Ozark Border regions of western Missouri (Figure 1, Table 3).

Statewide, Missouri's poult-to-hen ratio peaked at 4.6 in 1971 and has steadily declined since the late 1980s other than an increase in production that occurred during the late 1990s (Figure 2). Production was especially poor during the mid-to-late 2000s, with the statewide poult-to-hen ratio exceeding 1.5 only once from 2005-2010. The 2011 and 2012 hatches represented considerable improvements from those of recent years; however, turkey production was generally poor in 2013.

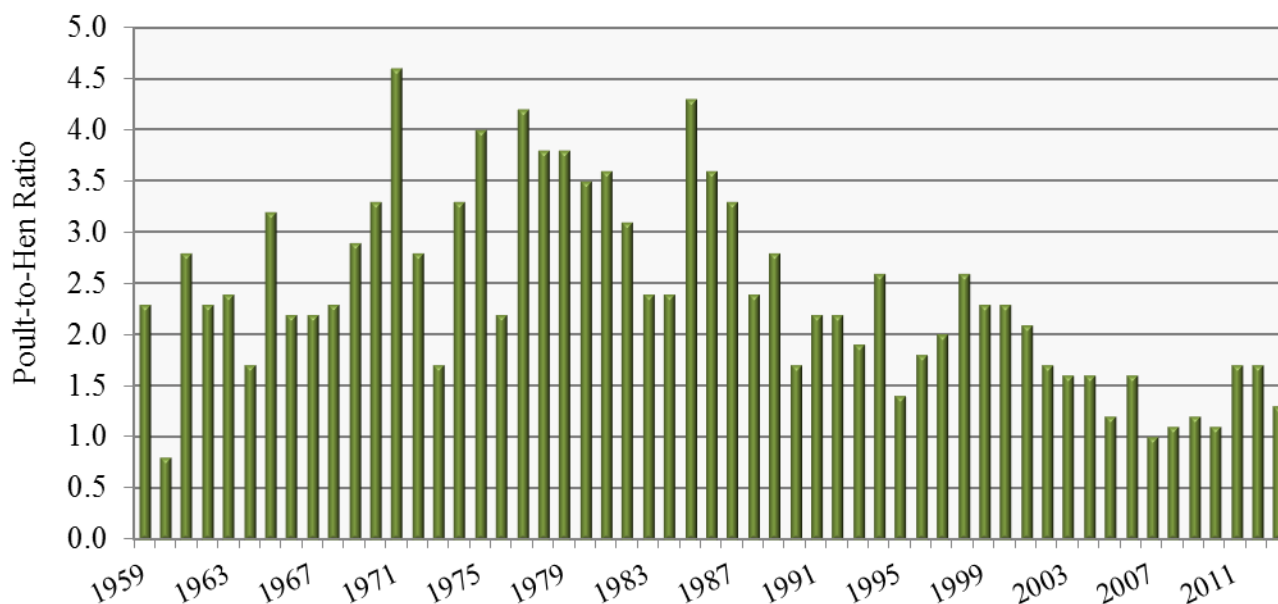


Figure 2. Missouri statewide poult-to-hen ratios derived from the Wild Turkey Brood Survey conducted in June, July, and August, 1959-2013. Observations of >2 hens per brood are not included in poult-to-hen calculations.

RESTORATION

Turkey translocations have not occurred since the winter of 2006-2007 when 100 birds were released in the Mississippi Lowlands region (Figure 1). Missouri's primary efforts to establish wild turkey populations ended in 1979 after several thousand turkeys had been translocated to areas identified as having suitable habitat but no turkey population. The recent attempts since 2000 to translocate wild turkeys into southwest and southeast Missouri, where turkeys already exist at relatively low densities, have been only marginally successful. Because of the high cost of translocation and the marginal potential for long-term population increase in areas already containing turkeys, translocation of turkeys is currently a low priority for the Department.

HARVEST

2014 Spring Turkey Season

During the youth spring turkey season, which took place on April 12-13, hunters harvested 4,329 turkeys. This harvest total represents a 10% increase from the 2013 youth season harvest and was 14% higher than the previous 5-year average. The 2014 youth season harvest was the highest since the season was initiated in 2001. Hunters harvested 43,274 turkeys during the 21-day regular spring turkey season, which ran from April 21 – May 11.

Juvenile male turkeys represented 16% of the regular season harvest, which is 24% lower than the previous 5-year average. The percentage of juvenile males in the spring harvest and the previous year's scaled poult-to-hen ratio corresponded well in 2014 after beginning to show signs of divergence in previous years (Figure 3). The total 2014 spring harvest, including both the youth and regular seasons, was 47,603. This harvest total represents a 3% increase from the 2013 harvest, and is 6% higher than the previous 5-year average. Counties with the highest total spring harvest in 2014 were Franklin, Texas, and Laclede, where 1,028, 1,010, and 828 turkeys were harvested, respectively (Figure 4).

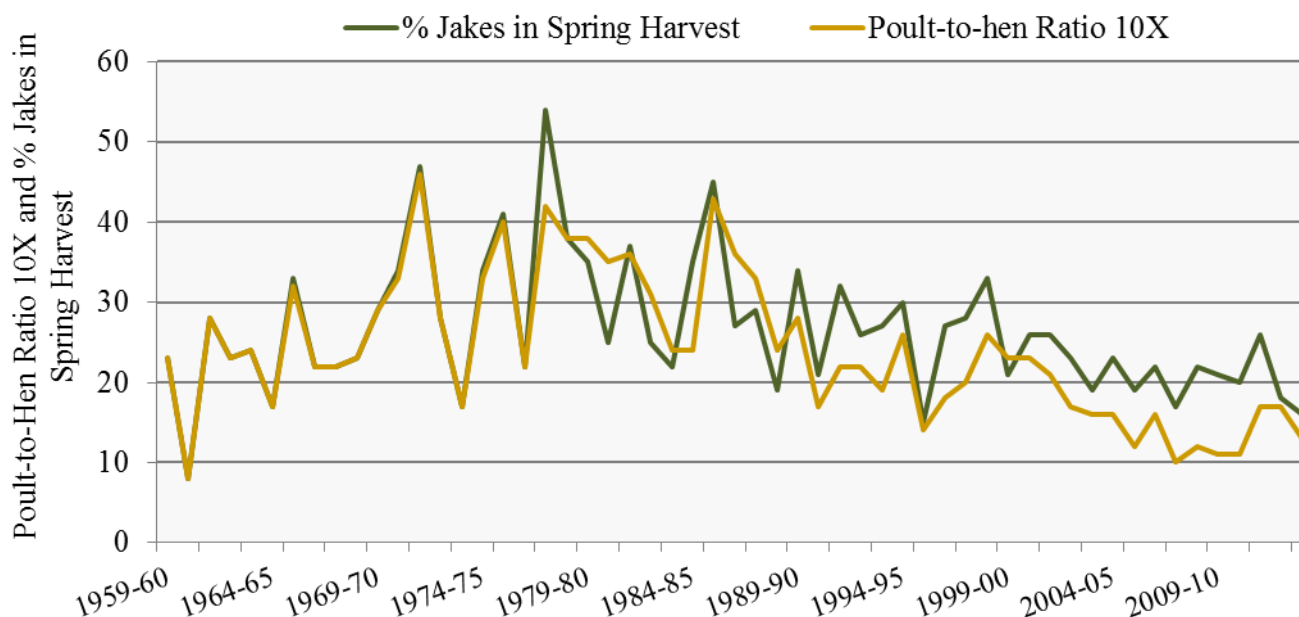


Figure 3. Missouri's statewide poult-to-hen ratio multiplied by 10, compared with the percentage of jakes in the following year's spring harvest, 1959-2014. Observations of >2 hens per brood are not included in poult-to-hen ratio calculations.

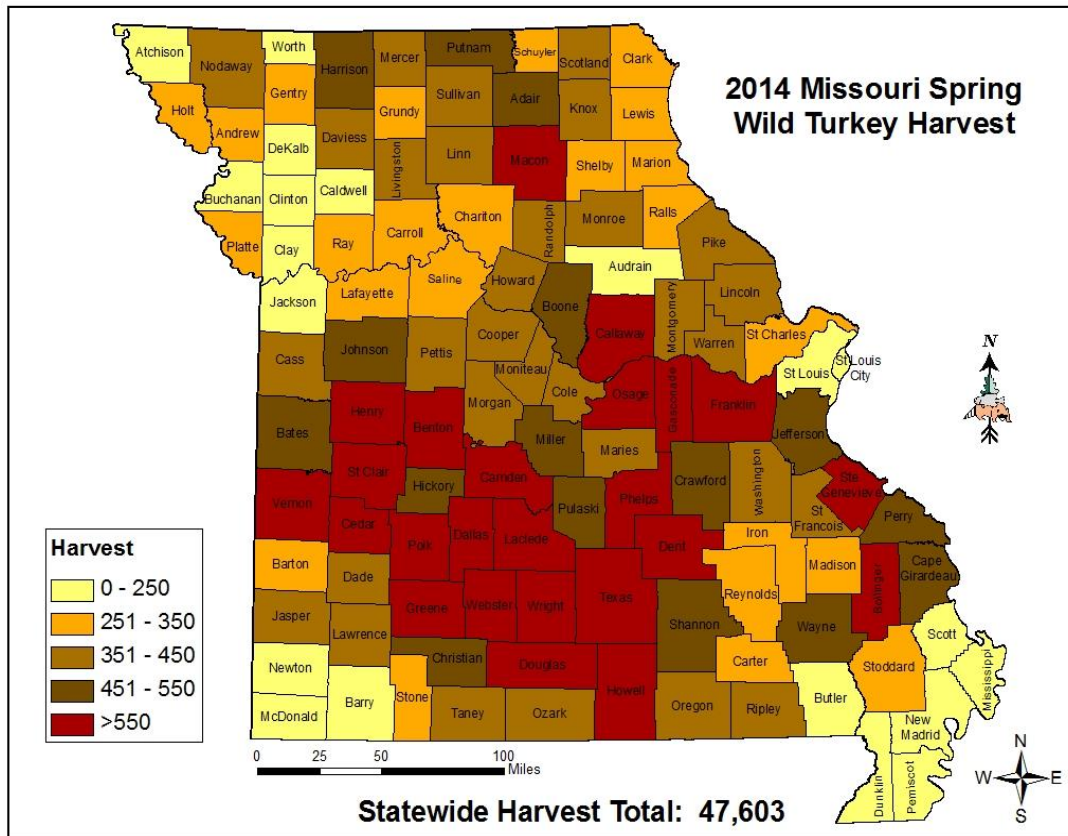


Figure 4. Total (youth and regular seasons) spring wild turkey harvest in Missouri, 2014.

Spring turkey hunting in Missouri is a substantial recreational activity with more than 500,000 days spent afield each year. Total permit sales for the 2014 spring turkey season (110,636; excluding no-cost landowner permits) declined by 4% from the 2013 spring permit sales total and were 3% greater than the previous 5-year average. Spring turkey permit sales during 2014 remained 15% below the permit sales record set in 2003 (Figure 5). Spring turkey permit sales in 2014 included 103,514 (94%) resident permits and 7,122 (6%) nonresident permits. An additional 43,138 no-cost permits were distributed to resident landowners. The total number of spring turkey hunters in Missouri in 2014 was 148,911. Note that the total number of hunters does not equal the permit total because some hunters purchase a permit in addition to receiving a no-cost landowner permit.

Spring turkey harvest in Missouri during 2014 was 22% below the record harvest of over 60,000 birds in 2004 (Figure 5). Spring turkey hunter success has stabilized since 2007 after declining during the early to mid-2000s (Figure 6). The success rate for permit-buyers during the 2013 (2014 data not yet available) spring season was 77 wild turkeys harvested per 1,000 hunting trips. The 2013 hunter success rate was 10% above the previous 5-year average.

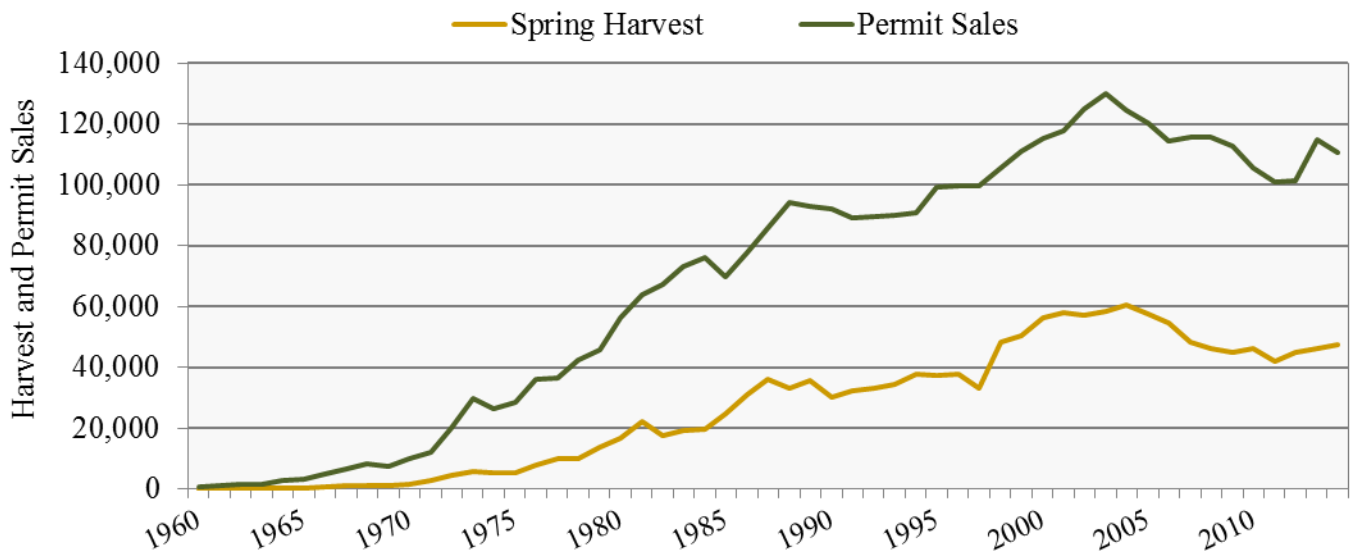


Figure 5. Number of wild turkeys harvested during the spring season (youth and regular seasons) in Missouri, and the number of turkey hunting permits sold for the spring season, 1960-2014. Permit sales do not include no-cost landowner permits.

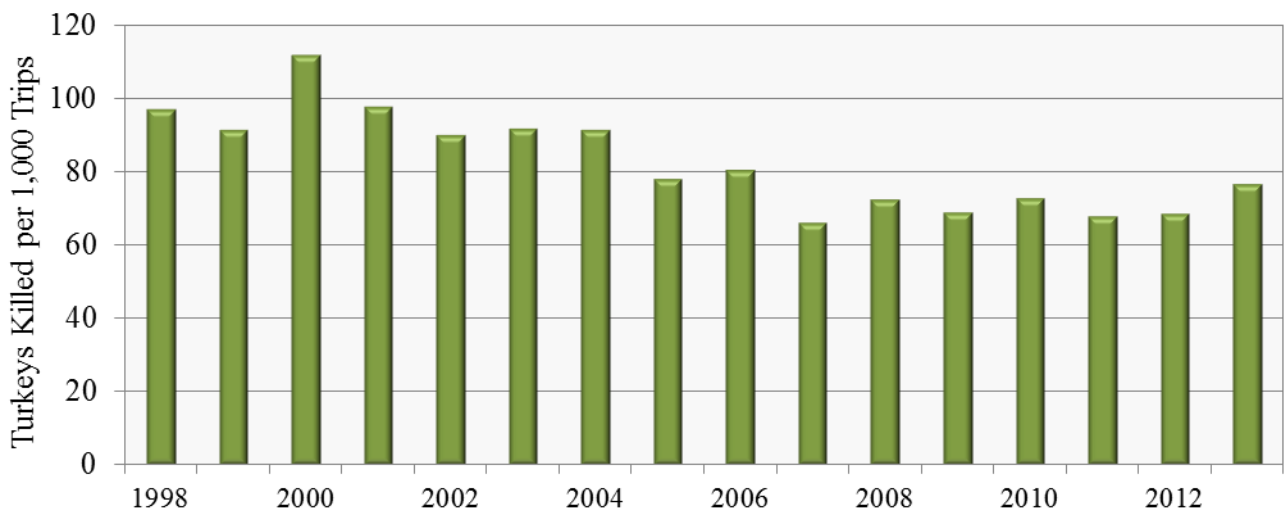


Figure 6. Statewide spring turkey hunter success in Missouri. Data are the number of turkeys harvested per 1,000 hunting trips, 1998-2013 (spring season length increased from 14 to 21 days in 1998).

2013 Fall Firearms Turkey Season

The 2013 fall firearms turkey harvest total of 5,931 represented a 30% decrease in harvest from the 2012 season, and was 20% lower than the previous 5-year average. The majority of the fall firearms harvest occurred in southern Missouri (Figure 7). The top 3 counties in harvest were Greene, Webster, and Laclede where 208, 158, and 153 turkeys were harvested, respectively.

Fall firearms turkey permit sales decreased by 9% in 2013 (Figure 8). Of the 14,898 fall firearms turkey permits sold in 2013, 14,657 (98%) were purchased by Missouri residents and 241 (2%) by nonresidents; an additional 58,576 no-cost permits were distributed to resident landowners. Fall firearms turkey hunting in Missouri has generally been declining in popularity since the late 1980s when over 50,000 permits were sold and over 28,000 turkeys were harvested during the 14-day season (Figure 8).

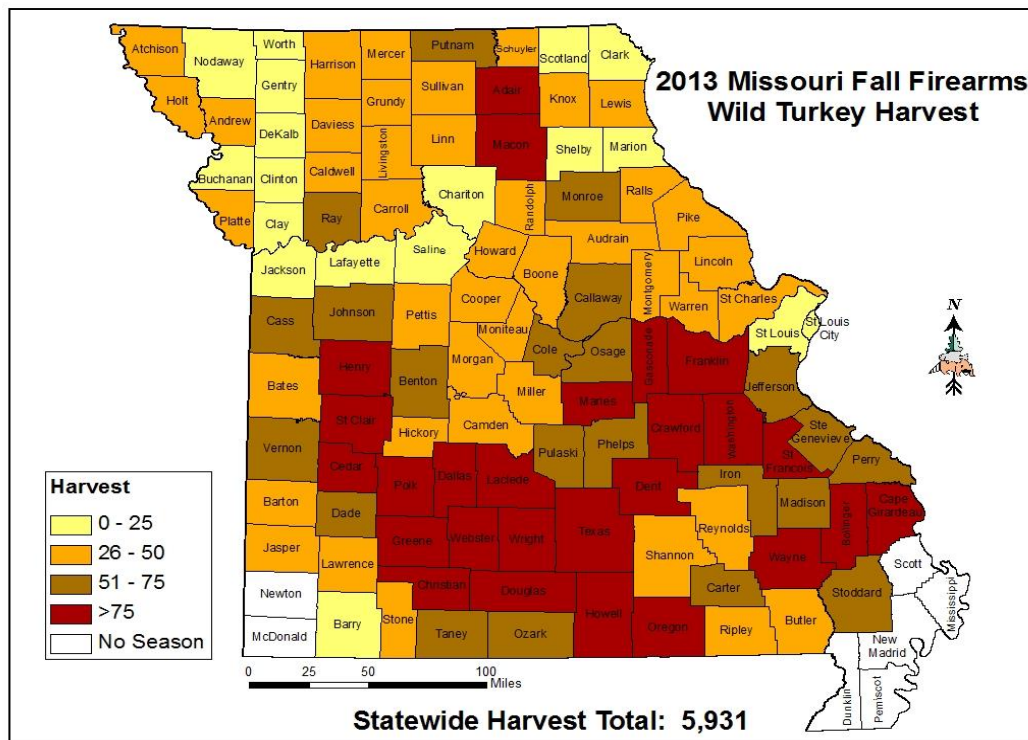


Figure 7. Missouri fall firearms wild turkey harvest, 2013.

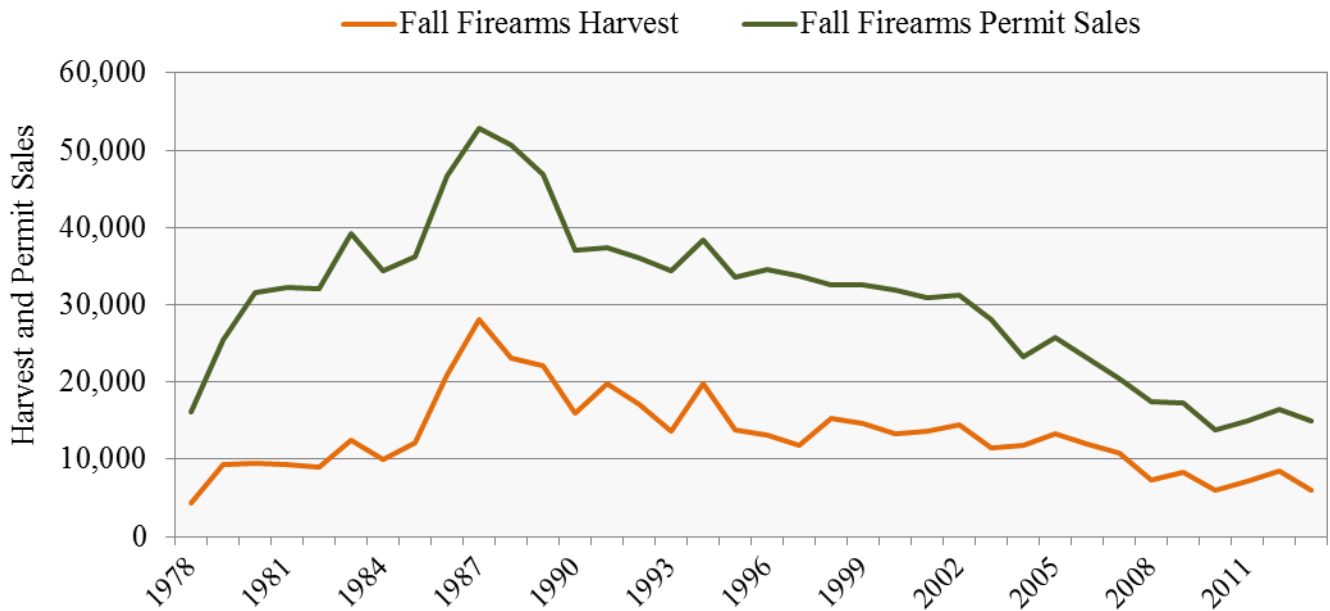


Figure 8. Number of wild turkeys harvested during the fall firearms turkey season in Missouri, and the number of fall firearms permits sold, 1978-2013. Permit sales do not include no-cost landowner permits.

2013 Fall Archery Turkey Season

Hunters harvested 2,546 turkeys during the 2013 fall archery turkey season (Figure 9). The 2013 archery turkey harvest total represents a 21% decrease from the 2012 season (Figure 10), and was 10% lower than the previous 5-year average. Unlike the fall firearms turkey harvest, which has shown a declining trend since the late 1980s, the fall archery harvest followed an increasing trend until the mid-2000s. Since 2005, archery turkey harvests have fluctuated substantially on an annual basis (Figure 10).

Although archery permit sales were relatively stable from the mid-1990s through the mid-2000s, sales have since shown an increasing trend (Figure 11). In 2013, 115,157 permits were sold; the second highest total since the season's inception. Of the archery permits sold in 2013, 106,652 (93%) were purchased by Missouri residents and 8,505 (7%) by nonresidents. An additional 85,367 no-cost landowner permits were distributed, which brought the total number of archery permits in 2013 to over 200,000.

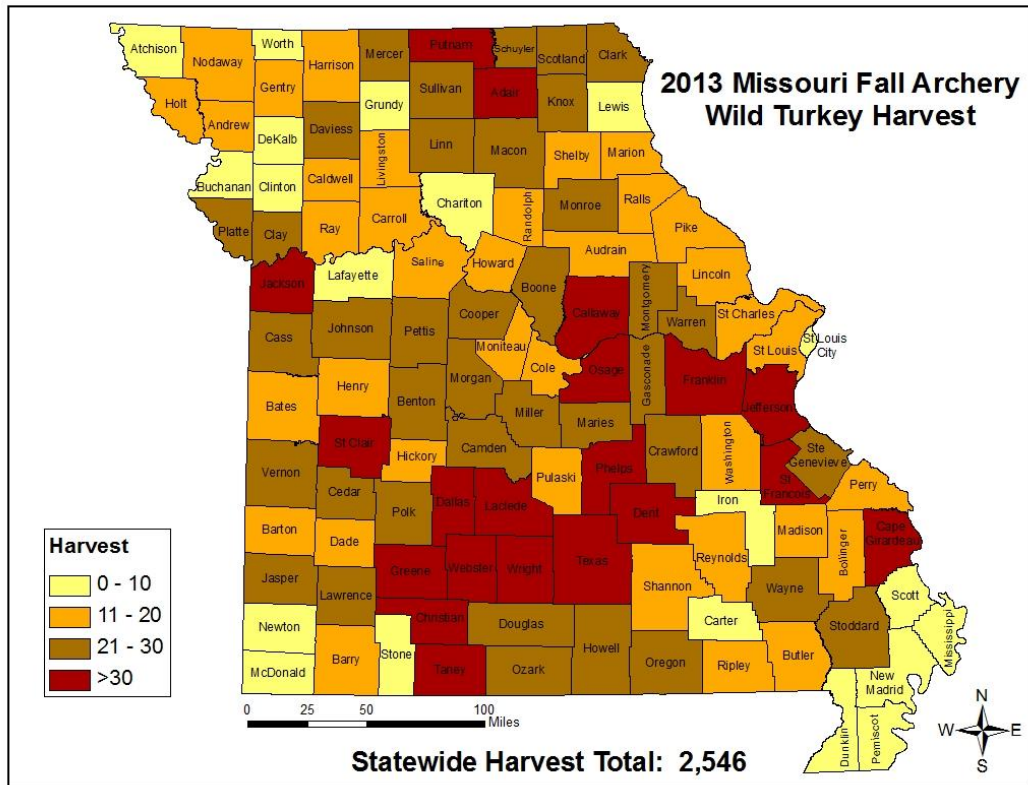


Figure 9. Missouri fall archery wild turkey harvest during the 2013 season.

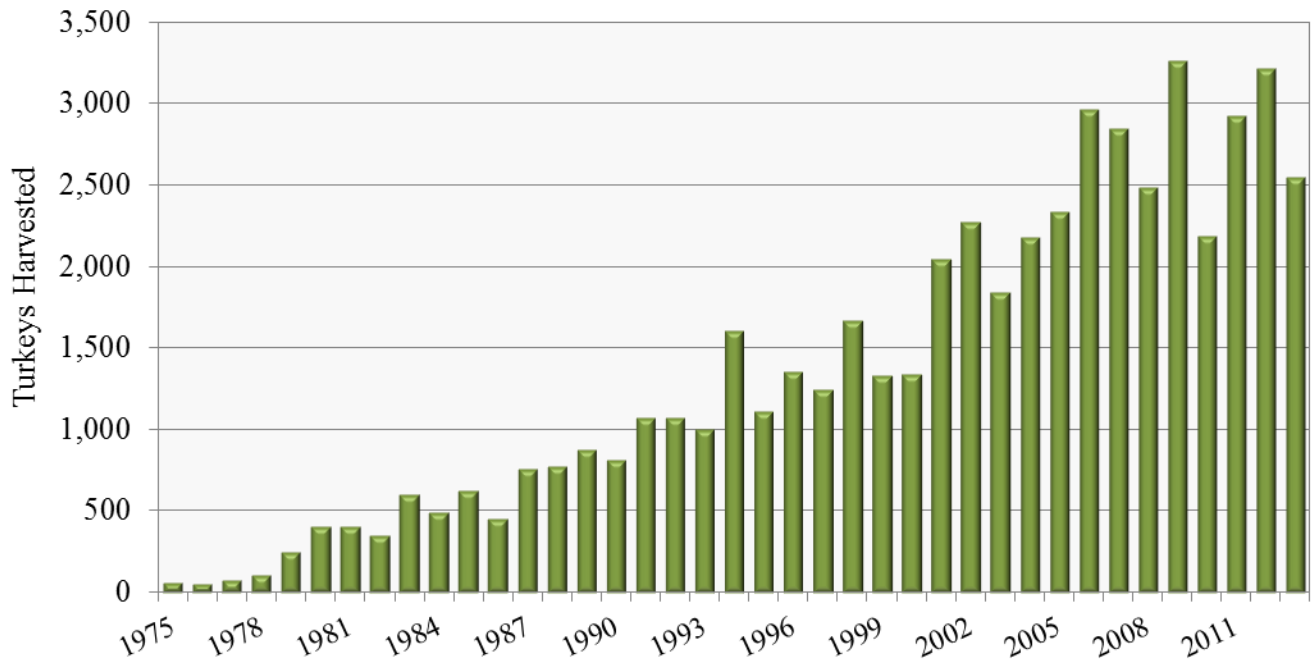


Figure 10. Missouri fall archery wild turkey harvest, 1975-2013.

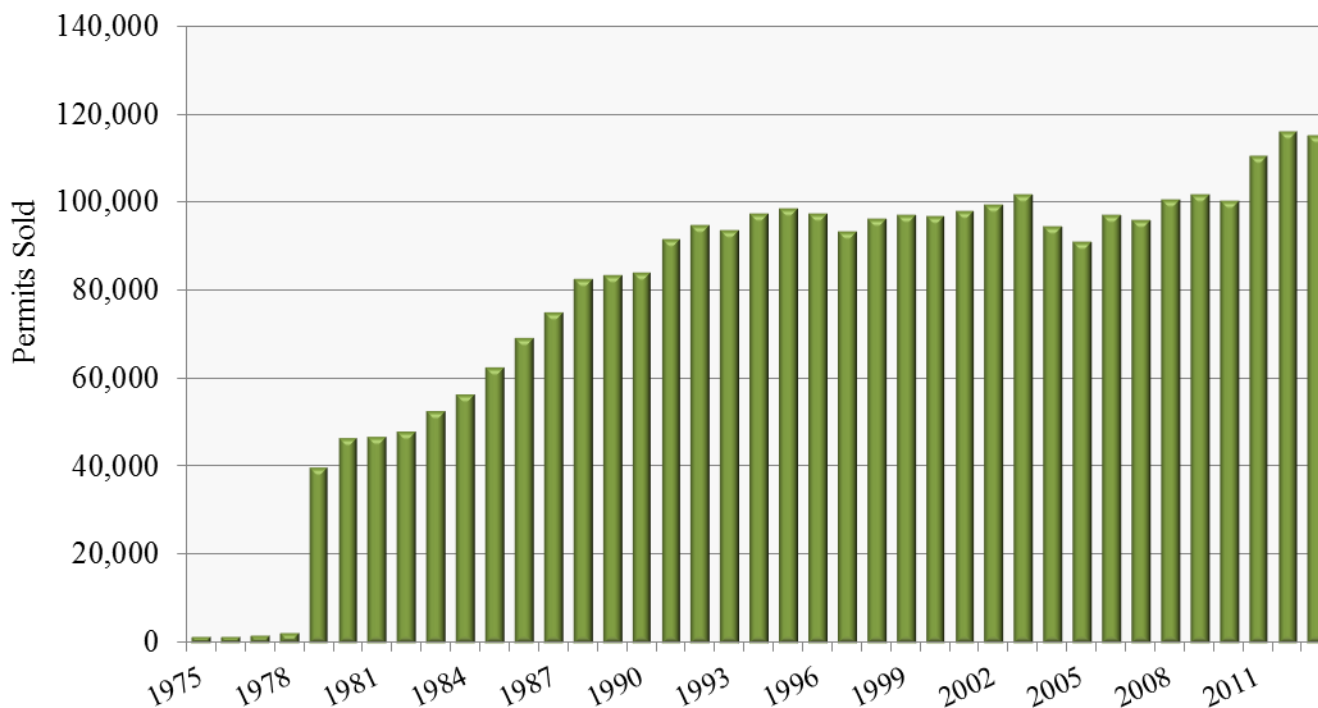


Figure 11. Missouri archery deer and turkey permit sales, 1975-2013. Permit sales do not include no-cost landowner permits. Prior to 1979, hunters purchased archery deer and turkey permits separately.

HUNTING INCIDENTS

There were 8 hunting incidents that occurred during the 2014 spring turkey season, 2 of which involved fatalities.

RECENT REGULATION CHANGES

Beginning in 2014, crossbows became a legal method to take turkeys during the spring season.

POPULATION/ABUNDANCE INDEX - BOWHUNTER OBSERVATION SURVEY

Since 1983, MDC staff and citizen volunteers participating in the Bowhunter Observation Survey have recorded the number of wild turkeys observed while archery hunting. Since survey participants also record the number of hours spend bowhunting, an index of wild turkey abundance can be calculated.

At the statewide scale, the number of turkeys observed per 1,000 hours bowhunting in 2013 was 298 (Figure 12). At the regional scale, index values ranged from 192 in the Mississippi Lowlands region to 393 in the West Prairie region (Table 4). The statewide average of 298 represents a 30% decrease from 2012 and a 26% decrease from the previous 5-year average. The statewide index remains 37% and 45% below the previous 10 and 20-year averages, respectively (Table 4).

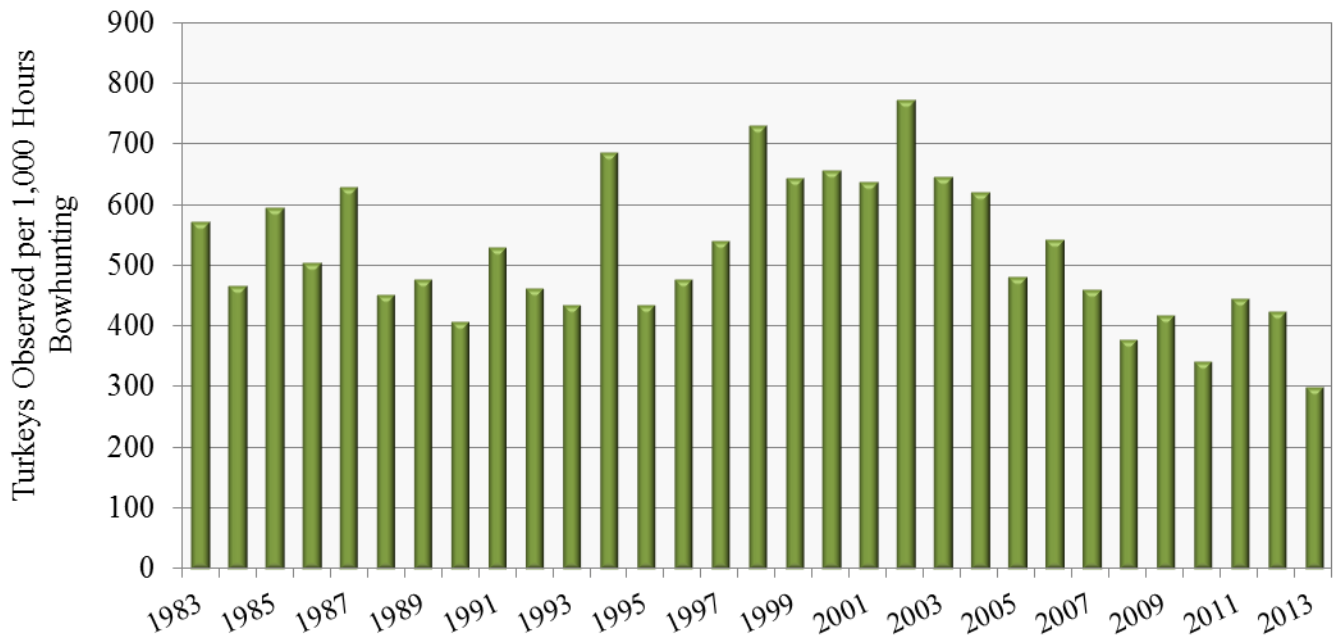


Figure 12. Statewide observations of wild turkeys by hunters in Missouri participating in the Bowhunter Observation Survey, 1983-2013. Data are the average number of turkeys observed per 1,000 hours bowhunting.

Table 4. Index of wild turkey abundance in Missouri by Turkey Productivity Region (Figure 1). Data were obtained from the Bowhunter Observation Survey. Index values are the number of turkeys observed per 1,000 hours bowhunting. For each interval value, the % change indicates how the 2013 index compares to the previous year or the average for periodic intervals.

Productivity Region	2013 Index	1-year (2012) Change	5-year (2008-2012) Change	10-year (2003-2012) Change	20-year (1993-2012) Change
Lindley Breaks	253	-33%	-27%	-30%	-40%
Mississippi Lowlands	192	+76%	-17%	-41%	-33%
Northeast	299	-35%	-26%	-43%	-56%
Northwest	334	-28%	-42%	-52%	-57%
Ozark Border	328	-40%	-15%	-29%	-40%
Ozarks East	207	-35%	-21%	-33%	-36%
Ozarks West	308	-19%	-6%	-22%	-31%
Union Breaks	282	-26%	-24%	-31%	-36%
West Prairie	393	-16%	-26%	-37%	-40%
Statewide	298	-30%	-26%	-37%	-45%

RESEARCH

Project Description

In 2013, the MDC initiated a wild turkey research project in partnership with the University of Missouri and the University of Washington. Funding is provided by the MDC and grants from the Wildlife Restoration Program and the George Clark Missouri State Chapter of the National Wild Turkey Federation. The research project will provide wild turkey demographic data, which will be used to develop statistical population reconstruction (SPR) models. SPR models will provide managers with a robust, statistically rigorous means of monitoring wild turkey populations in Missouri. In addition to the development of population models, SPR modeling software will be developed to facilitate use of models by managers. The field-based portion of the project will be 5 years in length. SPR model development will occur during the early stages of the project as wild turkey demographic data are obtained. SPR modeling software development will occur throughout the 7 years of the project.

Research Objectives

1. Develop a regional wild turkey SPR model, which in addition to estimates of natural survival and harvest rates, would provide abundance and population growth rate
2. Develop SPR modeling software for future analysis of age-at-harvest and auxiliary data for wild turkeys and other harvested species in Missouri
3. Estimate sex and age class-specific seasonal and annual natural survival rates, and cause-specific mortality rates for wild turkeys in Northeast Missouri
4. Estimate age class-specific harvest rates for male wild turkeys in Northeast Missouri during the spring hunting season
5. Estimate sex-specific harvest rates for wild turkeys in Northeast Missouri during the fall hunting season
6. Estimate wild turkey reproductive parameters, including nesting rate, reneating rate, clutch size, hatching rate, nest success, reneest success, female success, and poult survival

Approach

The research project involves 3 components: wild turkey capture and marking, SPR model development, and development of SPR modeling software.

Wild Turkey Capture and Marking

Wild turkeys will be captured in north-central and northeast Missouri in 2 study areas. One study area consists of Putnam and Schuyler Counties; the other study area consists of Monroe and Marion Counties. Wild turkeys will be captured from Dec. – Mar. using rocket-nets. Researchers will capture adult and juvenile males and females. All male turkeys will be fitted with rivet-style leg bands and VHF radio-transmitters. All female turkeys will be banded, and a portion fitted

with VHF radio-transmitters. Radio-tracking will occur throughout the year with a goal of locating marked turkeys 2-3 days per week, except during the nesting season (April 1 – August 1) when females will be located 5 days per week and during the spring turkey season when males will be located daily.

Development of SPR Models

Researchers at the University of Washington will develop SPR models with data received from the field-based portion of the project and information currently being obtained by MDC's Wild Turkey Management Program (i.e., age-at-harvest and hunter effort data). SPR models will provide managers with annual estimates of male wild turkey harvest rates, natural survival, recruitment, abundance, and population growth rate. This information will be used to monitor Missouri's wild turkey population and assist in making harvest management decisions.

Development of SPR Modeling Software

To facilitate use of SPR models by managers, SPR modeling software will be developed. Modeling software will allow managers to input age-at-harvest and hunter effort data, along with auxiliary field data, to obtain previously-described model output annually.



Wild Turkey Status Report

Midwest Deer & Turkey Study Group
Potosi, MO 9-12 September 2014
Dr. Jeffrey J. Lusk

Population Assessment

The 2014 April Rural Mail Carrier Survey was conducted 1-4 April 2014. We received 465 cards by 25 April 2014, of which 448 contained complete information and were used in the following summaries (Table 1, Figure 1). Rural carriers made observations while traveling 183,186 miles of rural roads in 88 of Nebraska's 93 counties in April. Conditions reported by mail carriers during the survey period during the 2014 April Rural Mail Carrier Survey included rain, wind, and snow in various parts of the state, which may have affected the results. As such, interpretation of results should be done with caution. Indices were higher compared to 2013 in the Northeast, and lower in all other regions, as well as statewide. The 2014 July Rural Mail Carrier Survey was conducted 30 June-3 July 2014. We received 460 cards by 25 July 2014, of which 432 contained complete information and were used in the following summaries (Table 2, Figure 2). Rural carriers made observations while traveling 187,283 miles of rural roads in 86 of Nebraska's 93 counties in July. Regional wild turkey indices were higher in the Central region and lower in the Panhandle, Sandhills, Southeast, and Southwest regions in 2014 compared to 2013. The Northeast had similar turkey abundance indices in 2014 and 2013. All results are reported by Pheasant Management Regions (Figure 9).

TABLE 1. Wild turkey indices from the 2014 April Rural Mail Carrier Survey by pheasant management region. Carrier means are weighted by miles traveled per carrier.

Region	Mean Wild Turkeys per 100 miles & 90% Confidence Limits	Percent Difference from:		
		2013	Mean 2007-2013	Mean 2003-2013
Central	3.79 (2.20-5.37)	-22	-61	-52
Northeast	3.63 (2.77-4.50)	11	32	45
Panhandle	1.06 (0.25-1.86)	-37	-50	-32
Sandhills	5.83 (3.96-7.70)	-32	-56	-45
Southeast	2.94 (2.17-3.70)	-9	-17	-13
Southwest	7.52 (3.31-11.7)	-22	-47	-29
Statewide	4.10 (3.41-4.79)	-15	-34	-19

TABLE 2. Wild turkey indices by pheasant management region from the 2014 July Rural Mail Carrier Survey. Carrier means are weighted by miles traveled per carrier.

Region	Mean turkeys per 100 miles & 90% Confidence Limits	Percent Difference from:		
		2013	Mean 2009-2013	Mean 2004-2013
Central	1.47 (1.07-1.88)	46	-38	-18
Northeast	0.90 (0.68-1.12)	2	-10	8
Panhandle	0.41 (0.01-0.82)	-11	-46	-27
Sandhills	1.40 (0.89-1.91)	-39	-68	-60
Southeast	0.90 (0.66-1.14)	-16	-32	-29
Southwest	1.98 (1.14-2.82)	-12	-44	-26
Statewide	1.12 (0.96-1.28)	-8	-41	-27

FIGURE 1. Regional and statewide time series (2000-2014) of wild turkey population indices from the April Rural Mail Carrier Survey by pheasant management region.

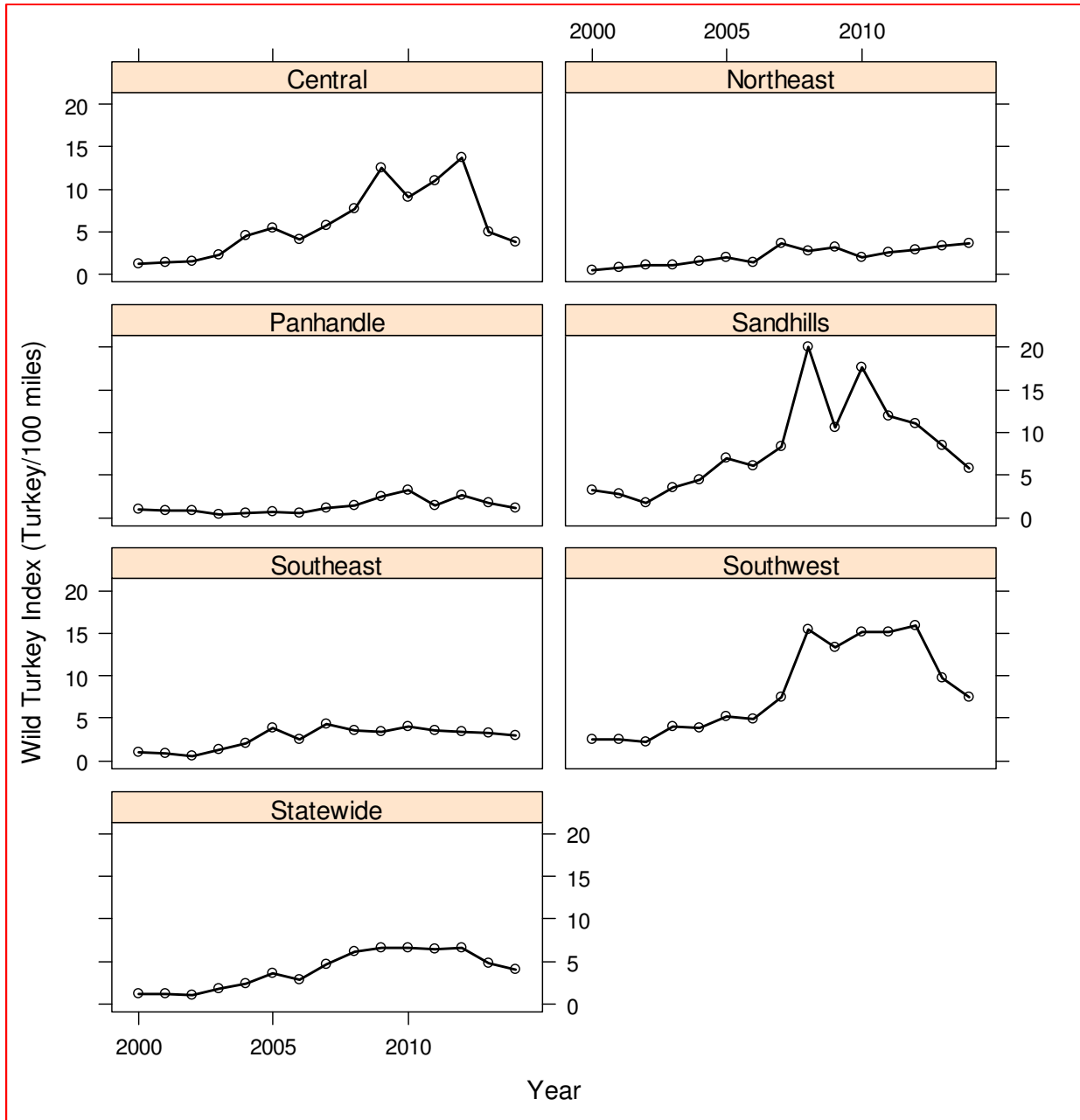
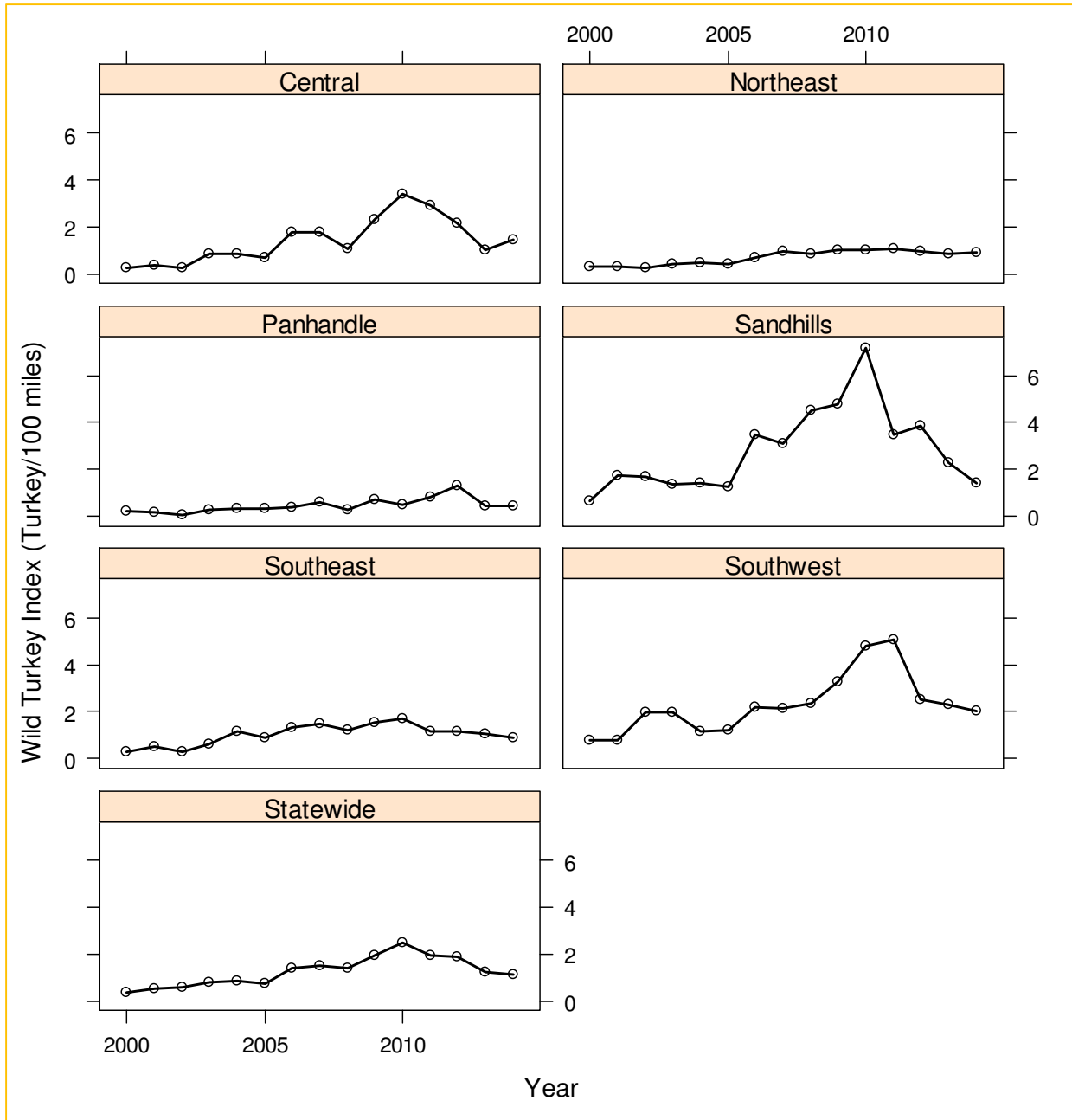


FIGURE 2. Regional and statewide time series (2000-2014) of wild turkey abundance indices from the July Rural Mail Carrier Survey.



Harvest Assessment

Fall 2013. The fall turkey hunter survey is conducted each year at the end of the fall season. The season closed on 31 January 2014. The objective of the survey is to obtain information on fall turkey hunter harvest and success. Information on age and sex composition of the harvest is also obtained and is reported elsewhere. This year's survey was available to hunters from 1 to 29 April 2014.

This year's survey was administered through Survey Monkey with the assistance of staff from the NGPC Communications Division. An initial email invitation to participate in the fall 2013 Turkey Hunter Survey was sent to 5,661 permit buyers with valid email addresses on 1 April 2014, which was 52.2% of permits sold after accounting for duplicate and invalid addresses (59.1% of permits sold were associated with an email address). Of the 5,661 invitations sent, 2 were reported as "spam" by recipients and 486 were bounced back as undeliverable; therefore, 5,169 invitations were received by permit buyers. Of these invitations, 1,978 were opened (38.3% of invitations received) and 912 clicked on the survey link (17.6% of invitations received). A reminder email was sent on 9 April 2014 to all recipients of the first invitation, except for recipients who "unsubscribed" from the mailings ($n = 4$). Of the 5,656 invitations sent the second time, 496 were bounced back, marked as "spam," or the recipient "unsubscribed" from the mailings. Therefore, 5,160 invitations were received by permit buyers, of which 1,719 were opened (33.3%) and 424 accessed the survey (8.2%). The survey was open to participants on the Survey Monkey website from 1 April through 29 April 2014. At the end of the survey period, 1,197 responses were received across both mailings, representing 1,442 fall turkey permits. The raw response rate was 23.1%, and the permit response rate was 27.9%. Each respondent to the survey represented 7.5 fall permit buyers.

Permit sales for the fall 2013 turkey season decreased by 13%, from 12,449 permits in 2012 to 10,836 permits in 2013 (Figure 3). Of the permits sold, 2,208 permits were \$5.00 youth permits (20.4% of permits sold) and 8,628 were regular, statewide permits (79.6% of permits sold). Youth permit sales were down 15.1% compared to 2012, and regular, statewide permits were down 12.4%. Based on harvest reported by survey respondents, total fall harvest for 2013 was 6,748 turkeys (Table 3), with youth harvesting 1,097 turkeys and regular, statewide permit holders harvesting 5,651 turkeys. Overall harvest decreased by 19.3% (16.3% decline for youth, 19.9% decline for regular, statewide permit holders) compared to 2012 (Figure 4). Success rates were also down compared to 2012 (Figure 5). Youth permit holders in 2013 were successful on 49.7% of their permits, whereas regular, statewide permit holders were successful on 65.5% of their permits; overall the success rate for all hunters was 63.6%. Overall success rates were above the 60% goal established in the Focus on the Future strategic plan for the fall turkey season. Table 4 summarizes the 2013 season results.

TABLE 3. Fall turkey season harvest and success, 2006-2013.

Type		Year							
		2006	2007	2008	2009*	2010	2011	2012	2013
Shotgun	Permits	8,373	10,784	9,855	12,738	12,241	11,482	12,449	10,836
	Harvest	4,092	8,857	8,236	10,853	10,356	8,405	8,362	6,748
	% Success	49	82	84	85.2	84.6	73.2	68.4	63.6
Archery	Permits	1,269	1,499	1,480					
	Harvest	334	572	539					
	% Success	26	38	36					

FIGURE 3. Fall turkey season permit sales, 1962-2013.

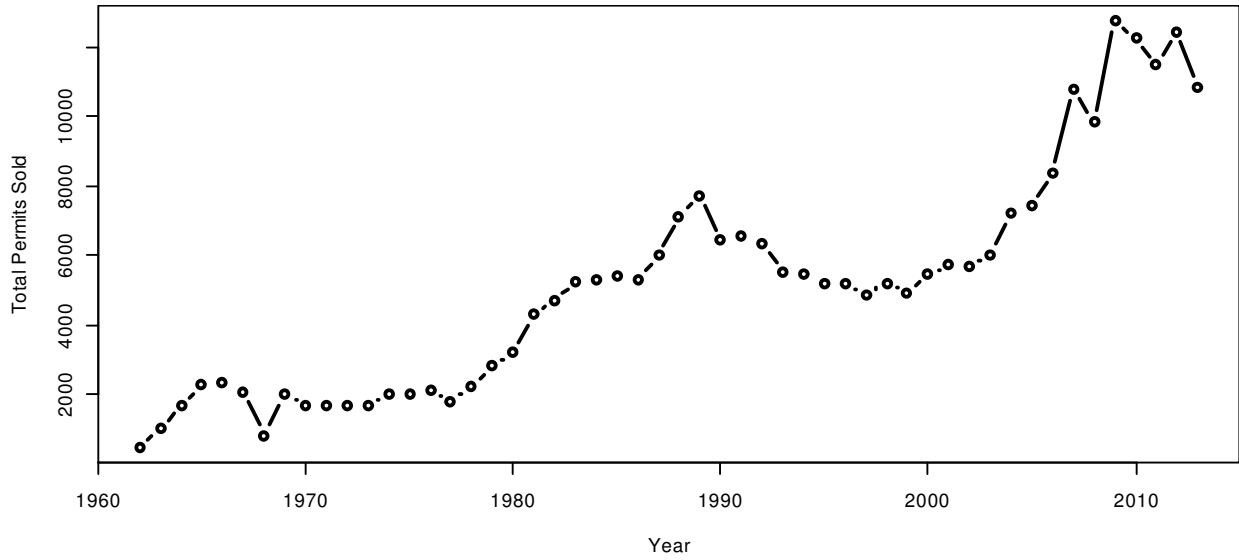


TABLE 4. Summary of fall 2013 turkey hunter survey responses and estimated harvest.

Permit Type	Permits Sold	Survey Permits	Reported Harvest	Success Rate	Estimated Harvest
Youth	2,208	175	87	49.7%	1,097
Regular	8,628	1,267	830	65.5%	5,651
Total	10,836	1,442	917	63.6%	6,748

FIGURE 4. Fall turkey season harvest estimates, 1962-2013. In 2007, bonus tags were added to fall permits, allowing harvest of two turkeys per permit.

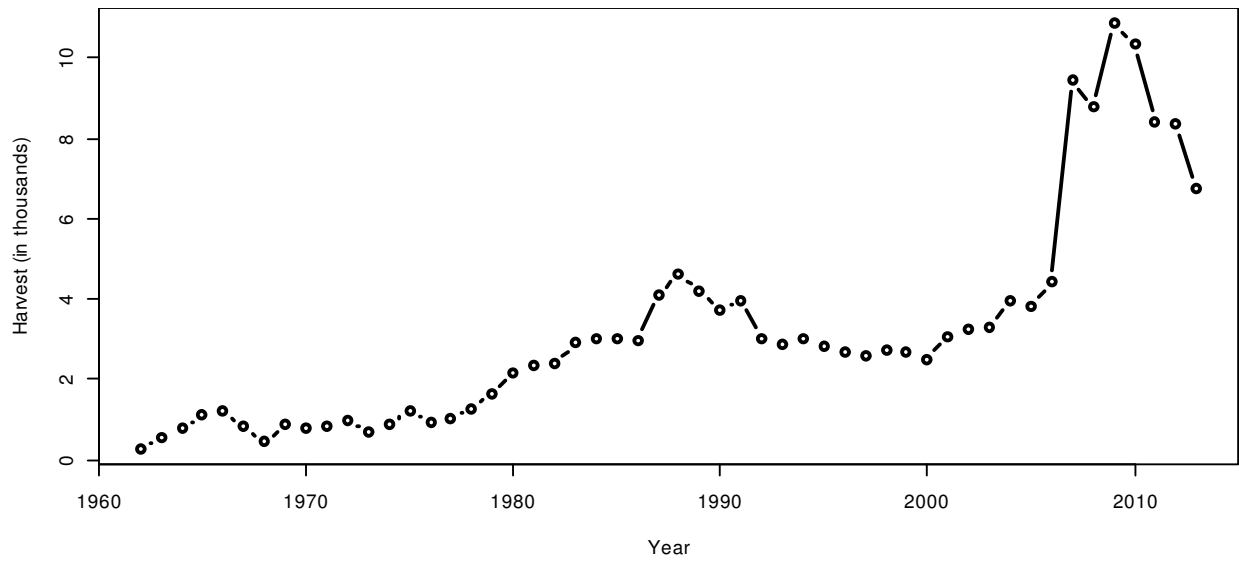
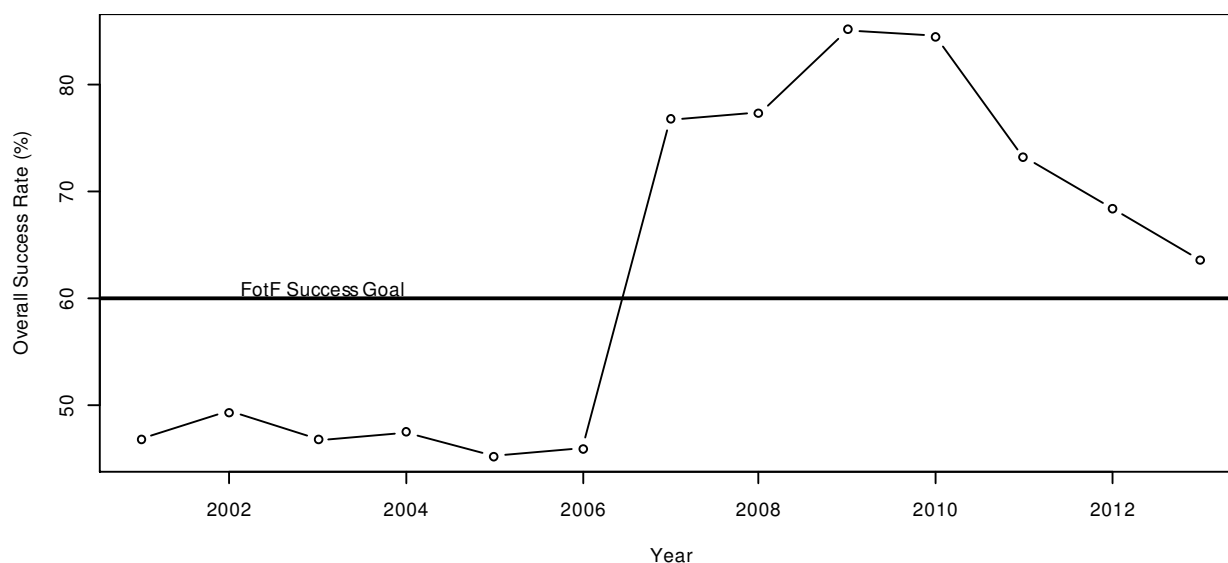


FIGURE 5. Fall turkey hunter success rate, 2001-2013. Horizontal line represents the success rate goal established in the Focus on the Future strategic plan. Note that in 2007, fall permits included a bonus tag allowing the harvest of a second turkey.



Spring 2014. The spring turkey hunter survey is conducted each year at the end of the spring turkey season, which closed this year on 31 May 2014. The objective of the survey is to obtain information on spring turkey harvest and hunter success, as well as information related to satisfaction. Information on the age and sex composition of the harvest is reported elsewhere. This year's survey was available to hunters from 2 July through 16 July 2014.

This year's survey was administered through Survey Monkey with the assistance of staff from the NGPC Communications Division. For the spring 2014 season, 34,430 permits were sold, of which 21,246 were associated with an email address. An initial email invitation to hunters to participate in the survey was sent on 2 July 2014 to 15,215 spring permit buyers who provided unique email addresses at the time of purchase (duplicate addresses were removed). Of these, 1,161 were bounced as undeliverable. After accounting for these undeliverable and duplicate addresses, the sampled hunter population represented 40.8% of the total number of permits purchased (61.7% of permits sold were associated with an email address). In response to the email invitation, 5,795 permit buyers opened the invitation, and 3,291 clicked the link to take the survey. A second mailing was sent out on 9 July 2015 to remind hunters about the survey, of which 4,769 permit buyers opened the email and 1,336 clicked the link to take the survey. The survey was closed on 16 July 2014. At the end of the survey period, 4,181 responses had been received, representing 6,209 permits. The raw response rate was 29.8%, and the permit response rate was 44.2%. Each survey respondent represented 5.6 spring turkey permit buyers.

Turkey permit sales for the spring 2014 season were 6.7% lower than in 2013 (34,430 vs. 36,904 permits sold; Figure 6). Of the permits sold, 5,576 were \$5.00 youth permits (16.2% of permits sold) and 28,854 were regular, statewide permits (83.8% of permits sold). Youth permit sales were down 9.2% compared with spring of 2013, and regular, statewide permit sales were down by 6.2% compared to 2013. Based on harvest reported by survey respondents, 18,960 turkeys were harvested during the spring season (Table 5, Figure 7); with youth permit holders harvesting 2,253 turkeys and regular, statewide permit holders harvesting 16,707 turkeys. Overall, harvest decreased by 11.6% compared with the 21,442 turkeys harvested in 2013. The decrease in harvest was

greater among regular, statewide permit holders (12.3% lower compared to 2013), than among youth permit holders (6.2% lower compared to 2013). The overall success rate (Figure 8) was lower in 2014 (56.1%) compared to 2013 (58.3%), but was higher among youth permit holders (40.4% in 2014 vs. 39.1% in 2013) and lower among regular, statewide permit holders (57.9% in 2014 vs. 61.9% in 2013). The overall and regular, statewide permit success rates are both above the 50% success rate goal established in the Focus on the Future strategic plan for the spring season. Table 6 summarizes the 2014 spring season results.

TABLE 5. Spring turkey season harvest and success (2008-2014).

Type	Statistic	Year						
		2008	2009	2010*	2011	2012	2013	2014
Archery	Permits	6,792	7,637					
	Harvest	2,888	3,688					
	Success	43%	48%					
Shotgun/ Regular	Permits	24,650	24,880	30,693	30,344	29,541	30,760	28,854
	Harvest	15,333	17,009	21,270	20,237	18,884	19,040	16,707
	Success	62%	68%	69.3%	66.7%	65.9%	61.9%	57.9%
Youth	Permits	2,480	2,776	6,210	6,385	5,979	6,144	5,576
	Harvest	1,548	1,485	2,912	3,065	2,535	2,402	2,253
	Success	62%	53%	46.9%	48.0%	42.4%	39.1%	40.4%

* Special archery permits were not required after 2009. Archery harvest occurred with a statewide permit during the archery season. Totals under Shotgun/Regular are for both archery and shotgun harvest for 2010 and subsequent years.

TABLE 6. Summary of spring 2014 turkey hunter survey responses and estimated harvest.

Permit Type	Permits Sold	Survey Permits	Reported Harvest	Success Rate	Estimated Harvest
Youth	5,576	643	260	40.4%	2,253
Regular	28,854	5,566	3,225	57.9%	16,707
Total	34,430	6,209	3,485	56.1%	18,960

FIGURE 6. Spring turkey season permit sales, 1964-2014.

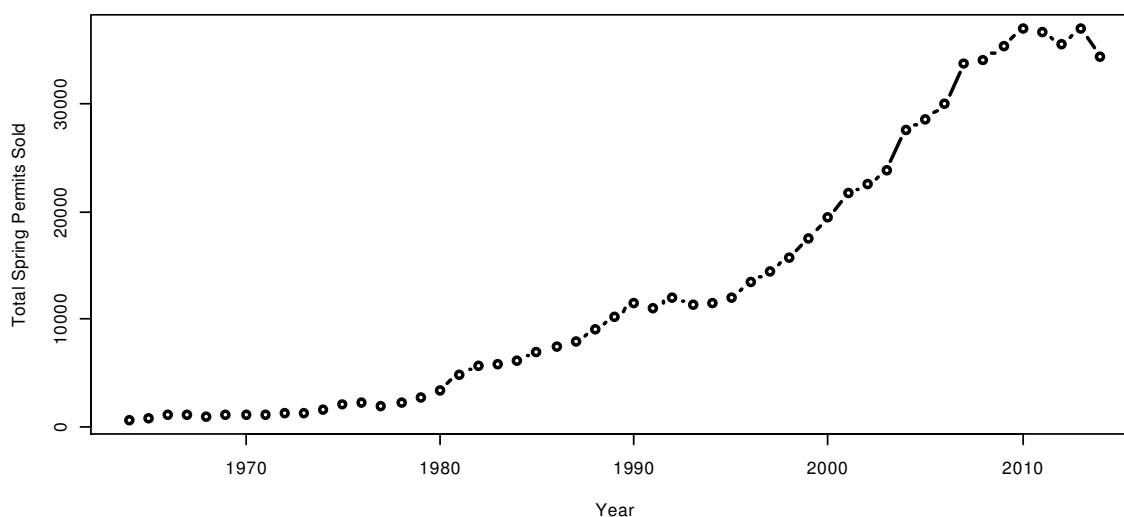


FIGURE 7. Spring turkey harvest, 1964-2014.

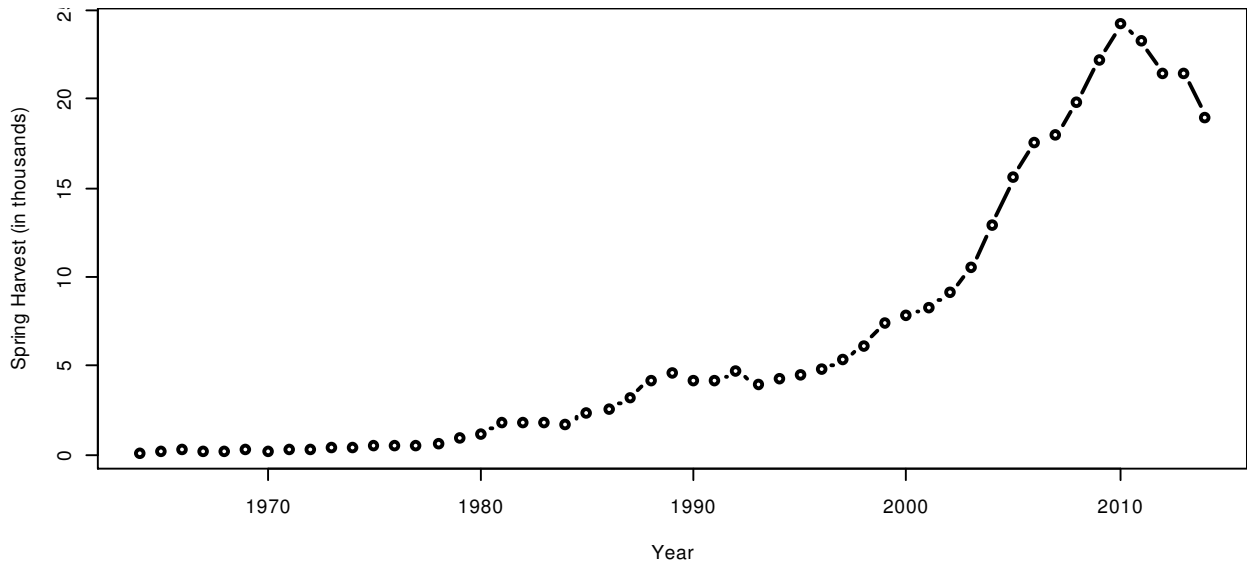


FIGURE 8. Spring turkey hunter success rate, 2002-2014. The horizontal line represents the success-rate goal established in the Focus on the Future plan (50% success).

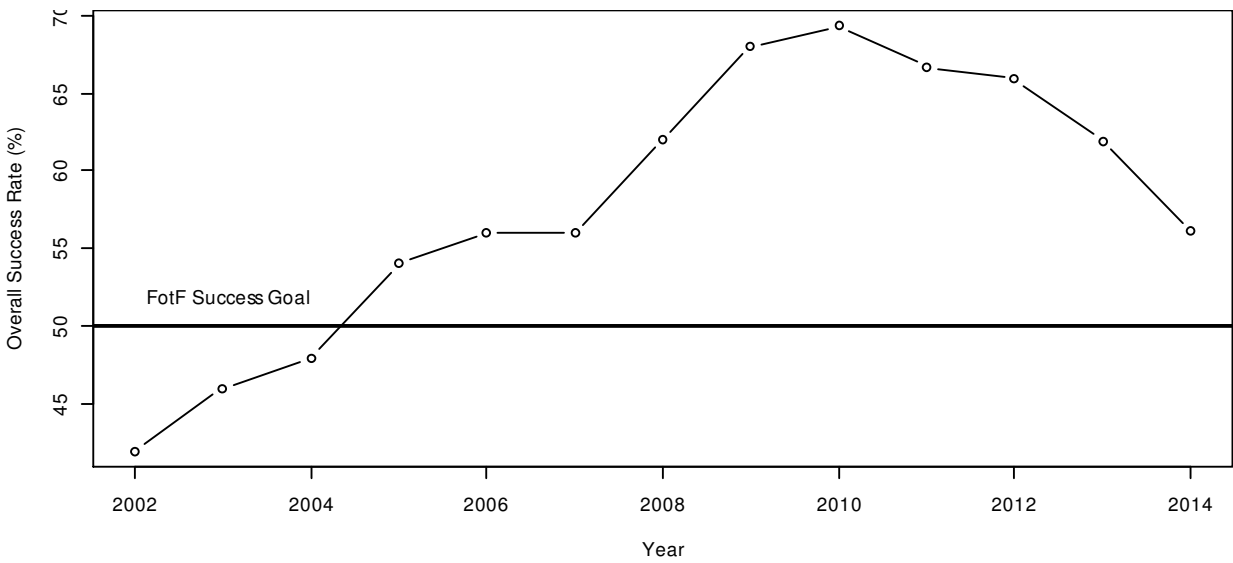
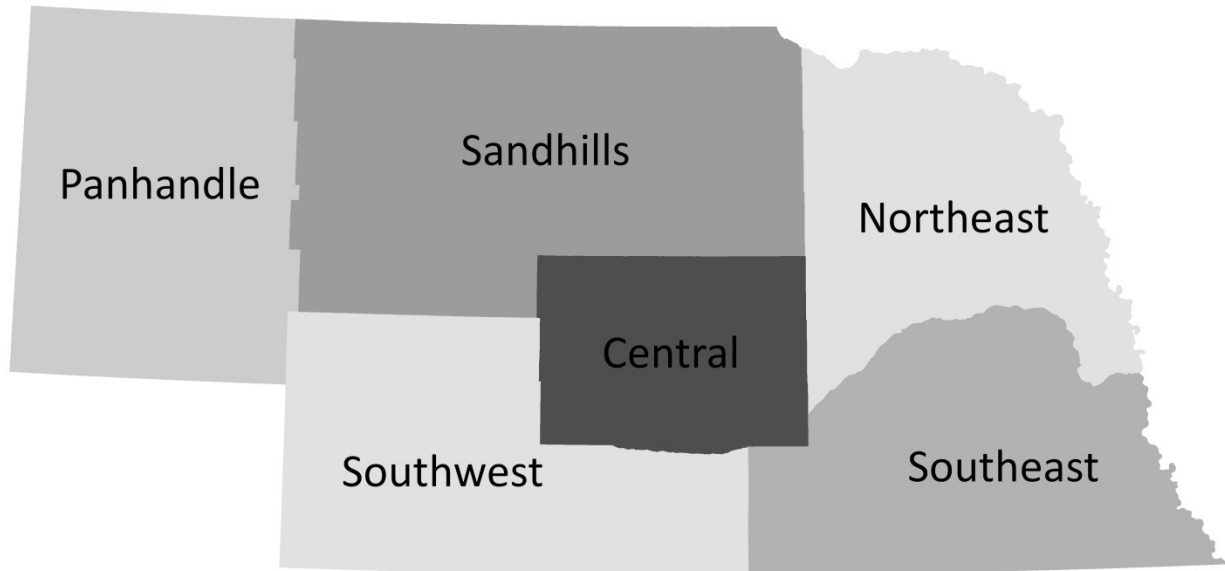


FIGURE 9. Pheasant management regions.



MIDWEST DEER/TURKEY WORKSHOP

YMCA Trout Lodge
Potosi, MO
September 9 - 12, 2014

NORTH DAKOTA WILD TURKEY REPORT

Stan Kohn
North Dakota Game and Fish Department
Bismarck, N.D. 58501

POPULATION ESTIMATES, 2014

The Department uses several population techniques to obtain trends on our wild turkey population. We have a landowner survey that is sent to most landowners who have turkeys wintering on their land (Figure 1). Our district biologists and game wardens annually record observations of wild turkey hens, broods and poults on standardized pheasant brood routes during July and August (Figure 2). We also have our field staff collect incidental turkey brood data (Figure 3) from June 1 to September 1.

Results of the 2014 statewide brood survey showed number of turkeys and number of broods to be up from 2013 and up over the last five years (Table 1). The number of young per adult hen and average brood size declined 20-25% from 2013. Broods per 100 miles were up 66% statewide and total number of turkeys per 100 miles was up 44% from 2013. Average brood size was 5.9 poults per adult hen, down 18% from 2013. Age ratio was 1.09 poults per adult. Our 2013-2014 winter landowner survey of turkeys showed numbers to be down about 9% from 2013. Many landowners in the western and eastern part of the state are still reporting low turkey numbers and very few poults. Turkey production has been rather poor the last four of five years, especially in western one-third of the state primarily due to cool, wet springs, causing poor nesting success and poor young survival.

FALL HUNTING SEASON, 2013

The state is divided into twenty-two hunting units and these areas include all 53 counties of North Dakota's (Figure 4). During the fall of 2013, twenty of 22 counties were open for wild turkey hunting. Unit 53 in the northwestern part of the state and unit 21 in the southwest were closed. These two units have been closed for the past five fall hunting seasons because of low turkey numbers.

Licenses are issued by weighted lottery after gratis licenses are deducted from the total available. Only North Dakota residents are eligible to apply in the first lottery. If licenses remain after the first lottery, then nonresidents can apply.

North Dakota has no specific youth hunting season for wild turkeys in the fall. We also do not have a specific bow season for turkeys. We provide a one time period for hunting wild turkeys in the fall, and you can choose your weapon from shotguns, muzzle loading rifles, handguns and bow/arrows. During the fall of 2013, the season was held from October 12, 2013 through January 5, 2014. There were 4,020 permits available and 4,066 were issued (254 gratis and 3,812 general permits). This was a decrease of 125 permits available (-3 percent) over 2012.

From the wild turkey questionnaire, it was determined that 2,583 license holders (63.5 percent) hunted during the fall. Hunters harvested 1,012 wild turkeys for a success of 39.2 percent. A summary of the fall hunting statistics for ND since 1958 can be found in Table 2. Figure 5 is a graph of fall harvest statistics from 1980 – 2013. Data regarding sex and age of the harvest was determined by a voluntary sample of wing tips and breast feathers sent in by hunters. Based upon a sample of 230 harvested birds, 35 percent of the 2013 fall harvest were females; 65 percent males, and 32 percent were juveniles; 68 percent adults.

SPRING HUNTING SEASON, 2014

Similar to fall turkey hunting, the state uses the same twenty-two hunting units during the spring season. These units include all of North Dakota's 53 counties. During the spring of 2014, the entire state was open for wild turkey hunting except for unit 21 in the southwestern part of the state. This area has been closed for the past five spring hunting seasons because of low turkey numbers in this unit.

Licenses are issued by weighted lottery after the number of gratis licenses is deducted from the total available. Only residents are eligible to apply for spring licenses, although one spring license is provided to the NWTF for auction.

First time spring turkey hunters age 15 or younger can receive one spring license valid for the regular hunting season for a specific unit. As in the fall season, we provide only a one time period for hunting wild turkeys in the spring. You choose your weapon from shotguns, muzzle loading rifles, handguns and bow/arrows.

This spring, the season opened April 12 and closed May 18 (36 days). Only bearded wild turkeys were legal to be harvested. A total of 6,613 applications (down 6 percent from 2013) were received for the 5,880 permits (down 8 percent from 2013) that were available. This included 344 gratis, 218 youth and 5,441 general permits.

Data from the spring hunter harvest questionnaire showed that 4,598 of the license holders (76%) hunted. Hunters harvested 1,947 wild gobblers (up 2 percent from 2013) for a hunter success of 42 percent (Table 3, Figure 6).

FALL HUNTING SEASON, 2014

For the 2014 fall hunting season, there are 3,805 permits available, 215 less than during fall 2013. The same two hunting units, one in the northwest and one in the southwest, will closed this fall due to low turkey numbers. The season will open on October 11 and

close on January 4, 2015 (100 days). This is the same season length as in the past several years. Only residents are eligible to apply for the first drawing of licenses. If licenses are left after the first drawing, then both residents and nonresidents can apply for the remaining licenses on a first come basis. This will be the thirteenth year that the entire state will be open to wild turkey hunting.

TRAP/TRANSPLANT PROGRAM

During the 2013-2014 wild turkey trapping period, 64 wild turkeys were trapped at two locations. One location was in the eastern part of the state and the other one in the south-central. The trapped turkeys were released on wildlife management areas in the vicinity of the trapping. Of the total birds trapped and released, the age ratio was 25A:39J and the sex ratio was 18M:46F. The drop-net was used in both trapping operations. All birds were of the Eastern subspecies. We are beginning to see more turkeys showing up in urban settings. This is going to cause us more problems in the future.

PRESENT RESEARCH (Josh Courlas – Univ. Of Wisconsin)

Thesis Abstract:

Throughout much of the current range wild turkeys are often thought to prefer landscape with a mix of forested areas and interspersed openings. The Missouri Plateau Ecoregion lies in the western half of North Dakota and is characterized by large expanses of prairie grasslands and vast agricultural crop fields. Forest patches are scarce and scattered throughout this matrix of open landscape, creating what is traditionally viewed as marginal wild turkey habitat. Following the pilot study conducted during the spring of 2012, we chose to focus our survey efforts in the Missouri Plateau in order to increase the number of sample sites within a single region and therefore increase our ability to identify individual landscape covariates influencing wild turkey occupancy. We surveyed 66 transects, 63 of which were visited 3 times. Occupancy models suggested that an additive model including mean patch area of cropland fields and clumpiness of forest was the most supported model. In a separate model set, another highly supported model was an additive model that included percentage of land designated as agriculture and proportion of forested land as site covariates influencing occupancy probability. Our models also suggest that variation in detection probability was best explained by the time that an individual survey was conducted with regard to time of sunrise, with surveys beginning prior to or soon after sunrise yielding greater rates of detection than those conducted later in the morning. When designing future monitoring plans for the wild turkey in North Dakota, managers should keep in mind the effects of survey timing on detection probability. Future trap and transplant efforts to relocate nuisance wild turkeys should focus on relocating birds to areas with a moderate amount of forest cover that occurs in relatively connected patches. Relocation sites should also be areas with smaller agricultural patch sizes or areas that are not predominately agricultural fields.

Fig. 3

Incidental Turkey Brood Report

Return these forms to:

North Dakota Game and Fish Department
 100 North Bismarck Expressway
 Bismarck, ND 58501

Instructions: Please record brood sightings of wild turkeys from June through August. If your count is incomplete put a "+" after the count number. Do not use this form to record broods (coveys) that are recorded on any other census route. Record age of young turkeys by size (1/4, 1/2, etc.)

 County _____ Date _____

Location _____

Turkey Hunting Unit _____

No. of adults _____ (females _____ males _____)

No. of young _____ Age of young _____

Observer _____

SFN 0515

Fig. 5. Fall harvest statistics for turkeys in North Dakota, 1980 - 2013.

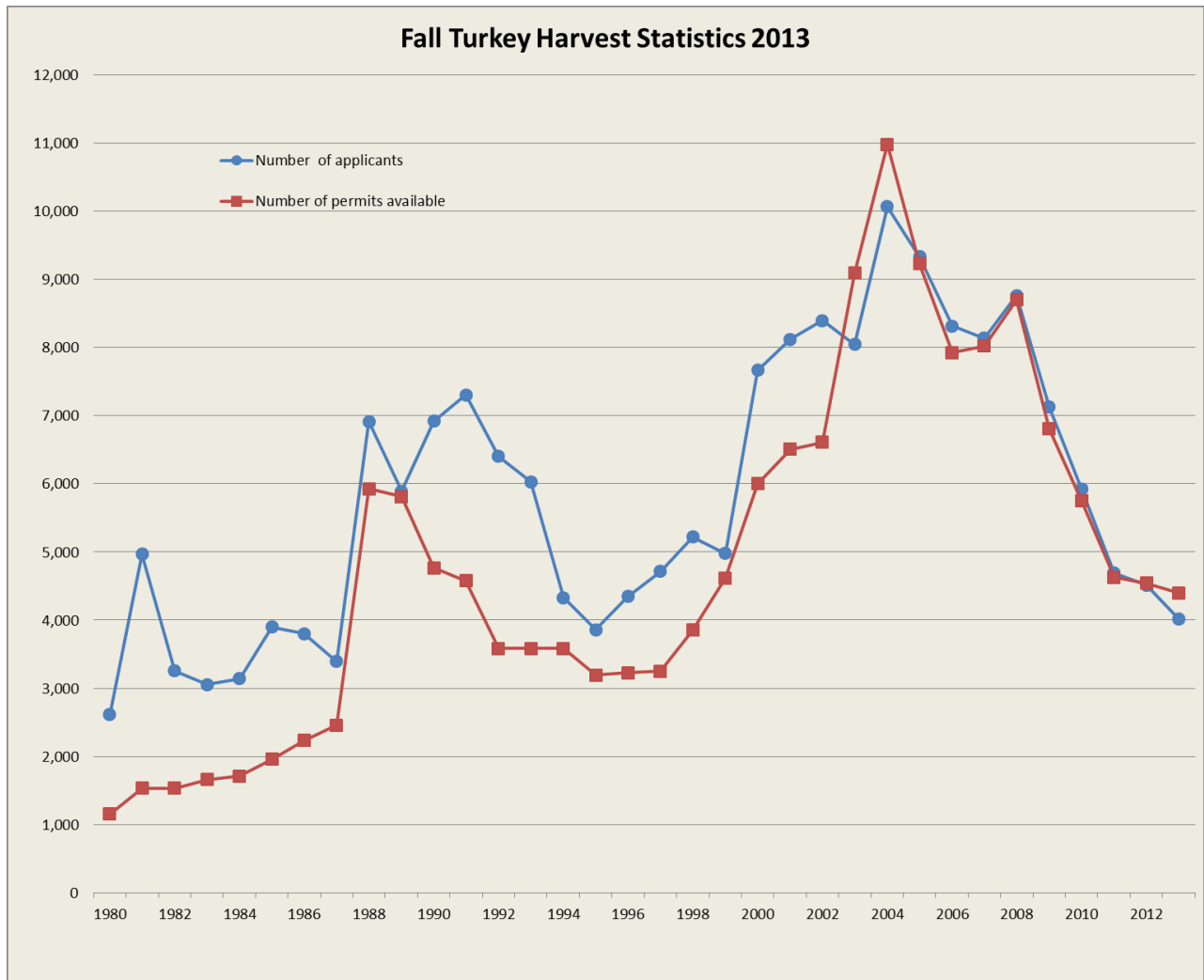


Fig. 5. Continued.

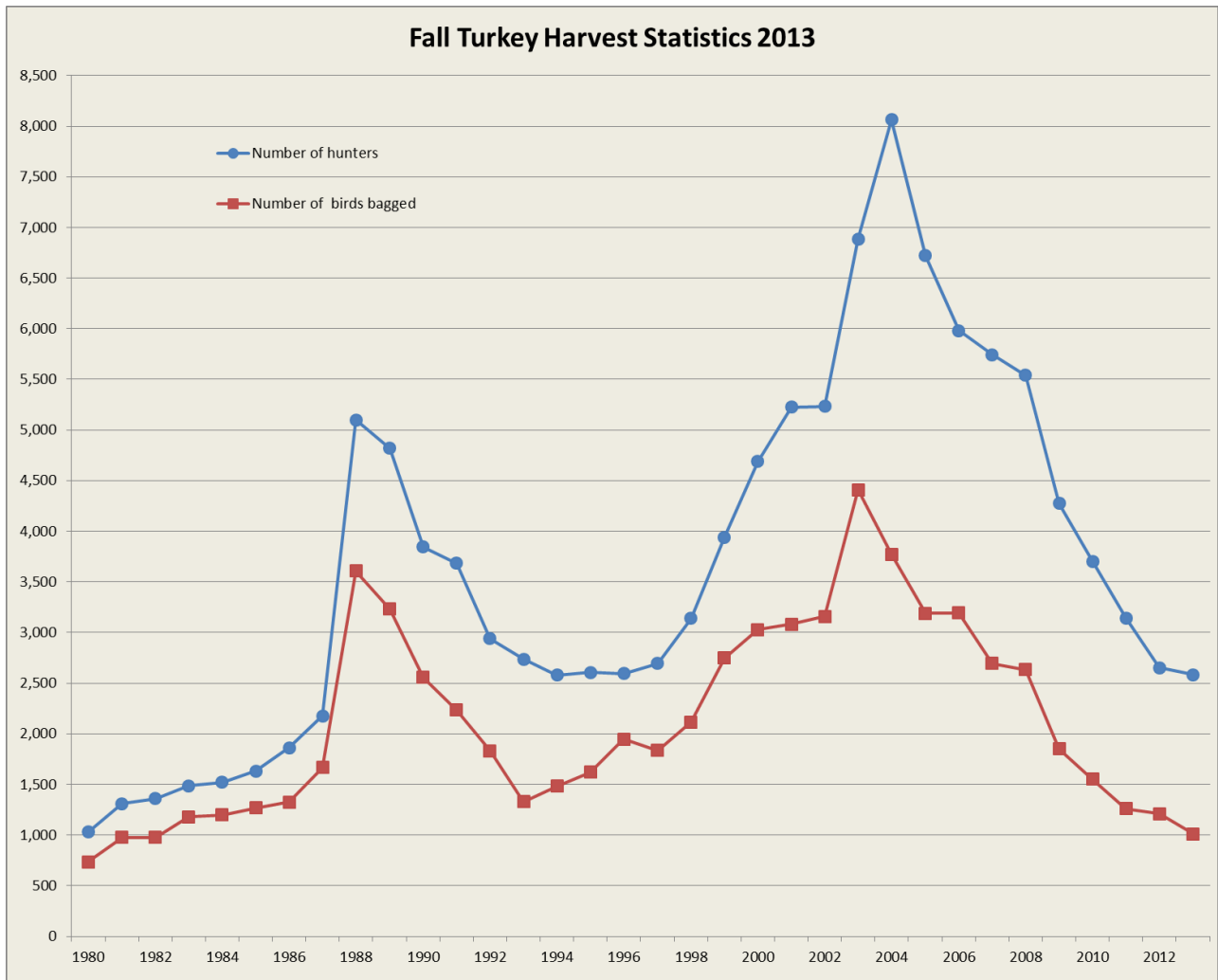


Fig. 6. Spring harvest statistics for wild turkeys in North Dakota, 1980 - 2014.

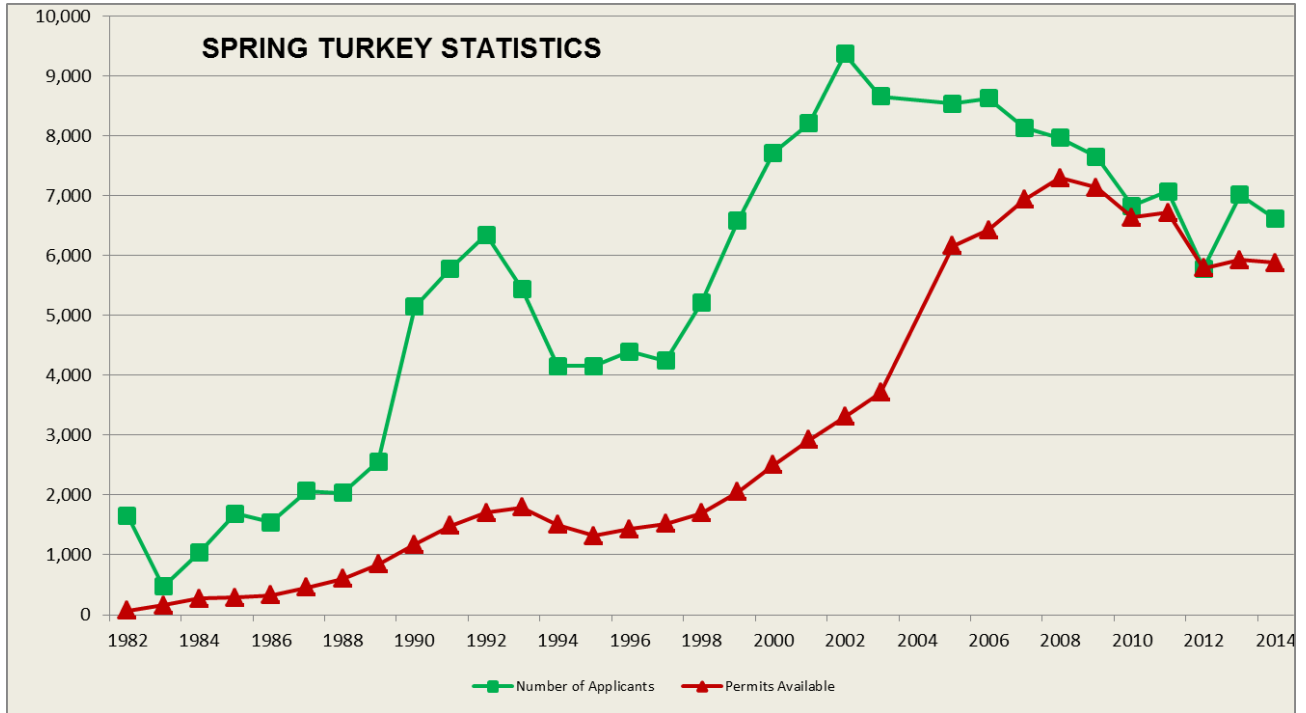


Fig. 6. Continued.

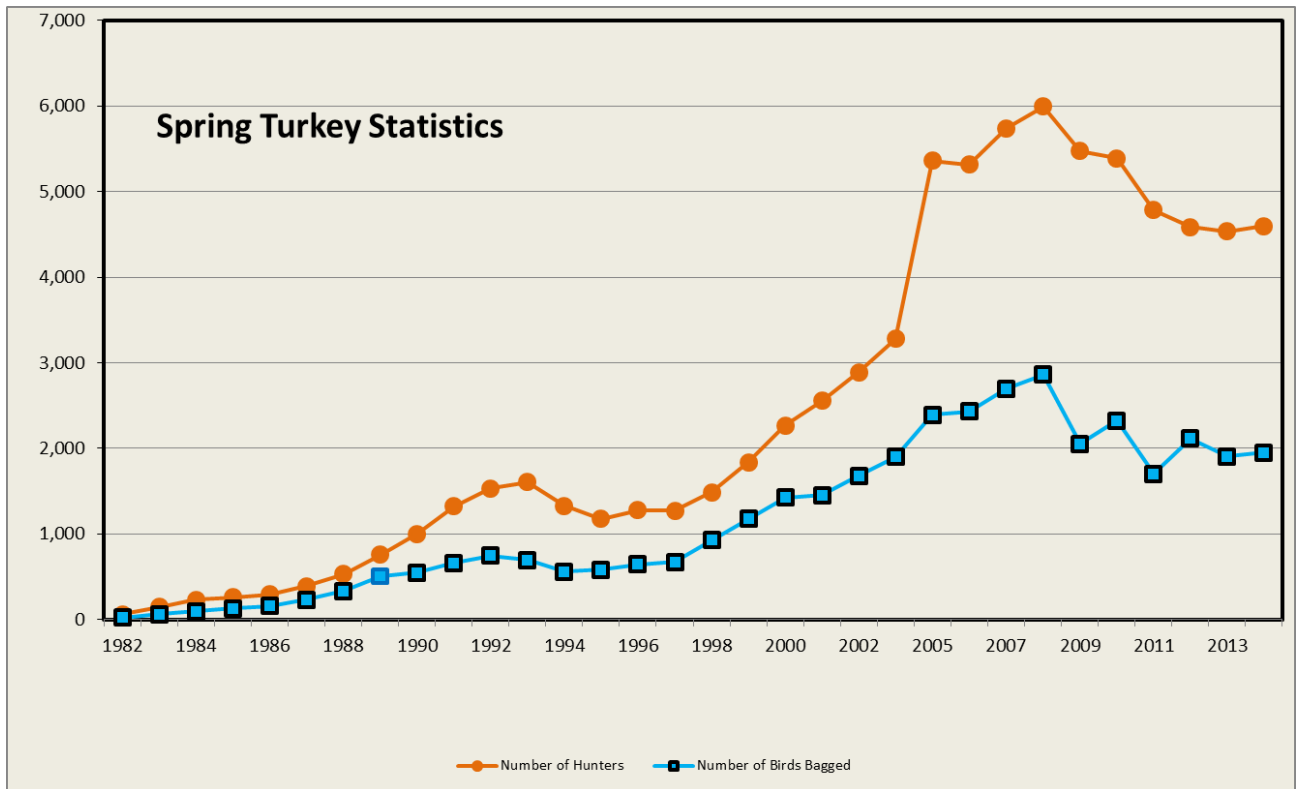


Table 1. Brood data for wild turkeys in North Dakota, 2009 - 2014.

PARAMETER	YEAR					% Change	
	2009	2010	2011	2012	2013	2014	2013 - 2014
Number of routes driven	267	266	242	258	252	232	-7.9%
Number of miles driven	5,313	5,249	4,817	5,056	5,008	4,592	-8.3%
Number of hours driven	396.5	407.2	337.1	363.1	366	338.1	-7.6%
Number of adult birds observed	82	99	71	141	73	114	56.2%
Number of juvenile birds observed	114	126	31	113	109	124	13.8%
Number of broods observed	15	17	7	14	15	21	40.0%
Number of birds observed per 100 miles driven	3.7	4.3	2.1	5.0	3.6	5.2	44.4%
Number of broods observed per 100 miles driven	0.3	0.3	0.1	0.3	0.3	0.5	66.7%
Number of juveniles per adult hen	3.1	3.2	0.9	1.2	2.6	1.9	-26.9%
Number of birds observed per hour driven	0.49	0.55	0.30	0.70	0.50	0.7	40.0%
Number of broods observed per hour driven	0.04	0.04	0.02	0.04	0.04	0.06	50.0%
Age ratio (juvenile/adult)	1.39	1.27	0.44	0.80	1.49	1.09	-26.8%
Average Brood Size	7.60	7.41	4.43	8.07	7.27	5.9	-18.8%

Table 2. Fall harvest statistics for wild turkeys in North Dakota, 1958 - 2013.

Year	Number of Applicants	Number of permits available	Number of permits issued *	Number of hunters	Number of birds bagged	Percent success	Average days hunted
1958			376	376	88	23.4	
1959	No Season		--	--	--	--	
1960	No Season		--	--	--	--	
1961			309	246	174	70.7	
1962			426	392	241	61.5	
1963			306	298	171	57.4	
1964			404	386	198	51.3	
1965			350	290	109	37.6	
1966	No Season		--	--	--	--	
1967			200	183	103	56.3	
1968			200	178	97	54.5	
1969			197	186	117	62.9	
1970			197	180	131	72.8	
1971			201	185	134	72.4	
1972			227	205	129	62.9	
1973			203	195	151	77.4	
1974			307	285	213	74.7	
1975			359	308	186	60.4	
1976			500	466	653	140.1	
1977			650	513	411	80.1	
1978			844	737	540	73.3	
1979	2,834	975	961	881	583	66.2	
1980	2,611	1,155	1,135	1,029	736	71.5	
1981	4,969	1,530	1,514	1,310	976	74.5	
1982	3,258	1,530	1,501	1,361	975	71.6	
1983	3,057	1,660	1,678	1,488	1,181	79.4	
1984	3,143	1,710	1,707	1,521	1,197	78.7	
1985	3,902	1,960	1,946	1,631	1,269	77.8	
1986	3,800	2,235	2,126	1,861	1,324	71.1	
1987	3,393	2,455	2,417	2,177	1,668	76.6	
1988	6,918	5,930	5,938	5,098	3,607	70.8	

* Includes lottery permits (10,504) plus gratis permits (720) in 2004.

Table 2. Continued.

Year	Number of Applicants	Number of permits available	Number of permits issued	Number of hunters	Number of birds bagged	Percent success	Average days hunted
1989	5,890	5,810	5,760	4,818	3,233	67.1	
1990	6,921	4,765	4,735	3,845	2,556	66.5	
1991	7,305	4,580	4,593	3,683	2,236	60.7	
1992	6,402	3,585	3,605	2,938	1,830	62.3	
1993	6,030	3,585	3,546	2,735	1,331	48.7	
1994	4,330	3,585	3,154	2,578	1,484	57.6	
1995	3,862	3,195	3,212	2,608	1,619	62.1	
1996	4,348	3,230	3,241	2,595	1,946	75.0	
1997	4,717	3,250	3,273	2,695	1,835	68.1	
1998	5,218	3,855	3,860	3,141	2,114	67.3	
1999	4,977	4,620	4,620	3,941	2,750	69.8	
2000	7,665	6,000	6,000	4,690	3,029	64.6	2.9
2001	8,119	6,510	6,622	5,224	3,083	59.0	2.9
2001	8,399	6,610	6,752	5,234	3,157	60.3	3.1
2003	8,048	9,095	8,896	6,886	4,410	64.0	2.8
2004	10,070	10,980	11,224	8,064	3,773	46.8	3.4
2005	¹ 9,334	9,230	9,331	6,722	3,191	47.5	3.3
2006	8,319	7,925	8,066	5,982	3,194	53.4	3.1
2007	8,138	8,025	6,961	5,743	2,696	46.9	3.0
2008	8,767	8,700	8,215	5,539	2,632	47.5	3.2
2009	7,126	6,805	6,804	4,274	1,851	43.3	3.1
2010	5,930	5,755	5,901	3,702	1,551	41.9	3.1
2011	4,692	4,630	4,708	3,145	1,259	40.0	3.5
2012	4,516	4,145	4,190	2,652	1,212	45.7	3.2
2013	4,401	4,020	4,066	2,583	1,012	39.2	3.7
TOTAL	201,409	155,465	168,514	129,983	76,346		
AVG:	5,500	4,442	3,024	2,453	1,440	58.7%	

¹ First year nonresidents were allowed to apply for fall turkey AFTER the first drawing for residents.

Table 3. North Dakota Spring Wild Turkey Hunting Seasons, 1976 - 2013.

Year	Number of Applicants	Number of permits available	Number of permits issued	Number of hunters	Number of birds bagged	Percent success
1976			30	22	9	40.9%
No Spring Wild Turkey Hunting Seasons 1977 through 1981						
1982	1,660	72	70	57	18	31.6%
1983	470	160	160	146	61	41.8%
1984	1,033	270	258	231	94	40.7%
1985	1,691	285	283	257	130	50.6%
1986	1,548	325	325	290	155	53.4%
1987	2,065	455	455	387	232	59.9%
1988	2,032	600	600	527	331	62.8%
1989	2,561	845	843	753	502	66.7%
1990	5,151	1,175	1,188	998	547	54.8%
1991	5,783	1,485	1,490	1,319	658	49.9%
1992	6,345	1,705	1,717	1,533	746	48.7%
1993	5,442	1,795	1,807	1,605	696	43.4%
1994	4,153	1,500	1,500	1,328	555	41.8%
1995	4,157	1,315	1,322	1,174	581	49.5%
1996	4,399	1,435	1,445	1,277	641	50.2%
1997	4,245	1,520	1,528	1,272	669	52.6%
1998	5,208	1,695	1,695	1,484	924	62.3%
1999	6,583	2,055	2,060	1,835	1,173	63.9%
2000	7,720	2,505	2,534	2,266	1,421	62.7%
2001	8,207	2,925	2,925	2,556	1,449	56.7%
2002	9,370	3,310	3,310	2,888	1,679	58.1%
2003	8,662	3,710	3,709	3,282	1,896	57.8%
2005	8,537	6,165	6,213	5,359	2,391	44.6%
2006	8,629	6,425	6,405	5,318	2,430	45.7%
2007	8,138	6,935	6,961	5,743	2,696	46.9%
2008	7,966	7,300	6,506	5,997	2,859	47.7%
2009	7,655	7,136	7,138	5,476	2,051	37.5%
2010	6,832	6,641	6,645	5,388	2,323	43.1%
2011	7,077	6,720	6,672	4,783	1,698	35.5%
2012	5,784	5,795	5,872	4,586	2,115	46.1%
2013	7,015	5,930	6,053	4,534	1,905	42.0%

Table 3. Continued.

Year	Number of Applicants	Number of permits available	Number of permits issued	Number of hunters	Number of birds bagged	Percent success
2014	6,613	5,881	6,003	4,598	1,947	42.3%
Total Avg.	5,398	3,002	2,991	2,477	1,174	47.4%

DIVISION OF WILDLIFE
Ohio Department of Natural Resources

TURKEY HUNTING SEASON RESULTS, FALL 2013

Olentangy Wildlife Research Station
Delaware, Ohio 43015

A total of 1,037 wild turkeys, 308 less than in 2012, were harvested in 56 counties during the 2013 Ohio fall wild turkey hunting season (Table 1; Figure 1). Fall turkey harvests have remained low and permit sales have generally declined since the record harvest of 2002 except for a modest increase in harvest and permit sales associated with an expanded fall season in 2008 (Table 2).

Figure 1. Counties open to fall hunting (showed in grey).



Columbiana County had the highest reported fall harvest in 2013 ($n = 52$), followed by Knox ($n = 44$), Ashtabula ($n = 41$), Clermont ($n = 33$), and Harrison ($n = 33$) counties. The top 5 counties collectively accounted for 20% of the 2013 fall turkey harvest.

As in most years, adult females ($n = 459$) comprised the bulk of the harvest (44%), followed by adult males ($n = 303$, 29%), juvenile females ($n = 160$, 15%), and juvenile males ($n = 115$, 11%).

The majority of turkeys were harvested on private land (91%), and 38% of the harvest was checked by landowners. Most successful hunters used a shotgun (69%), but 17% of hunters used crossbows and 14% used vertical bows to harvest a fall turkey.

The fall turkey harvest was well distributed throughout the entire 7-week season with 8% of turkeys harvested during the first weekend, 23% harvested during the first week, and 9 – 15% harvested during each of the remaining 5 weeks of the 2012 season.

Fall turkey permit sales ($n = 6,162$) increased $>1\%$ from 2012 sales and were 60% below the record fall turkey permit sales of 2002. Youth fall turkey permit sales ($n = 853$) decreased by 4% and resident reduced-cost senior fall turkey permit sales ($n = 1008$) increased by 4%. Resident free senior fall turkey permits ($n = 4,181$) declined (-48%) for the ninth consecutive year.

Success rates of fall turkey permit holders were slightly lower in 2013 (5%) than in 2012 (9%) and 2011 (10%). Success rates for youth fall turkey permits (5.5% vs. 9%) were lower in 2013 than 2012. Success rates for resident reduced cost senior permits (7% vs. 9%), and resident free senior fall turkey permits (0.9% vs. 0.8%) were similar in 2013 and 2012. Note that success rates are likely conservative because participation rates for each permit type are unknown.

It is unclear why fall turkey hunting success rates have been relatively low as compared to spring turkey hunting success in Ohio. Furthermore, the number of licensed fall turkey hunters is far fewer than the number of spring turkey hunters. Fall turkey hunting in Ohio may be ancillary to archery hunting for deer or other small game hunting seasons. Hunters may be harvesting turkeys when the opportunity is presented, but not actively seeking turkeys in the fall.

Table 1. Fall 2013 either-sex wild turkey harvest in 56 Ohio counties and comparisons with 2012 and 2011.

County	Sex and age of turkeys harvested, 2013				Total harvest		
	Adult male	Adult female	Juvenile male	Juvenile female	2013	2012	2011
Adams	6	14	0	3	23	37	35
Ashland	10	6	1	1	18	22	17
Ashtabula	10	21	4	6	41	61	67
Athens	3	7	1	1	12	32	27
Belmont	5	2	2	5	14	27	32
Brown	6	9	3	4	22	21	26
Butler	5	5	0	0	10	NA	NA
Carroll	7	8	1	2	18	29	38
Clermont	13	16	2	2	33	43	32
Columbiana	17	21	6	8	52	29	37
Coshocton	6	14	2	9	31	56	44
Cuyahoga	0	1	0	0	1	2	0
Defiance	6	8	4	1	19	20	13
Delaware	2	1	1	2	6	NA	NA
Fairfield	2	2	3	1	8	NA	NA
Franklin	1	1	0	0	2	NA	NA
Gallia	2	6	3	5	16	25	36
Geauga	6	10	5	3	24	53	31
Guernsey	7	11	5	5	28	40	53
Hamilton	12	3	2	1	18	NA	NA
Harrison	6	20	1	6	33	34	38
Highland	3	9	5	7	24	32	37
Hocking	1	5	3	4	13	28	20
Holmes	9	16	1	3	29	38	42
Huron	2	5	2	2	11	NA	NA
Jackson	5	5	0	5	15	21	17
Jefferson	10	6	1	4	21	24	20
Knox	11	18	8	7	44	46	55
Lake	3	3	0	1	7	9	7
Lawrence	4	5	3	2	14	14	21
Licking	5	12	0	5	22	41	40
Lorain	6	8	5	1	20	9	29
Mahoning	5	11	2	3	21	23	24
Medina	2	8	3	0	13	11	17
Meigs	5	6	2	1	14	30	15
Monroe	5	8	0	6	19	34	45
Morgan	2	6	0	1	9	17	23
Morrow	3	3	1	2	9	16	11
Muskingum	5	5	1	2	13	35	36
Noble	6	9	1	4	20	31	49

Table 1. Fall 2013 either-sex wild turkey harvest in 56 Ohio counties and comparisons with 2012 and 2011 (continued).

County	Sex and age of turkeys harvested, 2013				Total harvest		
	Adult male	Adult female	Juvenile male	Juvenile female	2013	2012	2011
Perry	5	4	2	1	12	29	26
Pike	2	12	0	4	18	21	21
Portage	6	8	2	4	20	19	19
Richland	8	14	2	1	25	37	39
Ross	7	8	3	3	21	20	19
Scioto	4	2	1	1	8	25	22
Seneca	1	4	1	1	7	NA	NA
Stark	6	12	3	2	23	18	23
Summit	3	8	0	0	11	9	3
Trumbull	9	11	5	4	29	36	32
Tuscarawas	9	12	2	5	28	53	53
Vinton	0	5	0	1	6	34	21
Warren	4	8	0	0	12	NA	NA
Washington	4	6	4	3	17	24	24
Wayne	5	1	1	2	9	7	9
Williams	6	10	5	3	24	22	27
Totals	303	459	115	160	1,037	1,345	1,425

Table 2. Summary of Ohio's fall wild turkey hunting seasons, 1996-2013.

Year	Counties open	Bag limit	Permits sold ^a	Total harvest
1996	22	1	10,050	1,250
1997	22	1	8,240	1,210
1998	22	1	4,804	1,234
1999	25	1	7,008	3,071
2000	28	1	9,861	2,428
2001	32	1	13,447	3,331
2002	35	1	15,469	2,394
2003	36	1	10,989	2,060
2004	36	1	8,455	1,808
2005	37	1	8,000	1,339
2006	37	1	7,422	1,175
2007	37	1	6,847	1,216
2008	46	1	9,223	2,139
2009	48	1	9,536	2,255
2010	48	1	8,594	1,425
2011	48	1	8,064	1,375
2012	48	1	7,924	1,345
2013	56	1	8,023	1,037

^aTotal includes fall turkey permits, fall turkey youth permits, and fall turkey reduced cost senior permits, but not fall turkey free senior permits.

DIVISION OF WILDLIFE

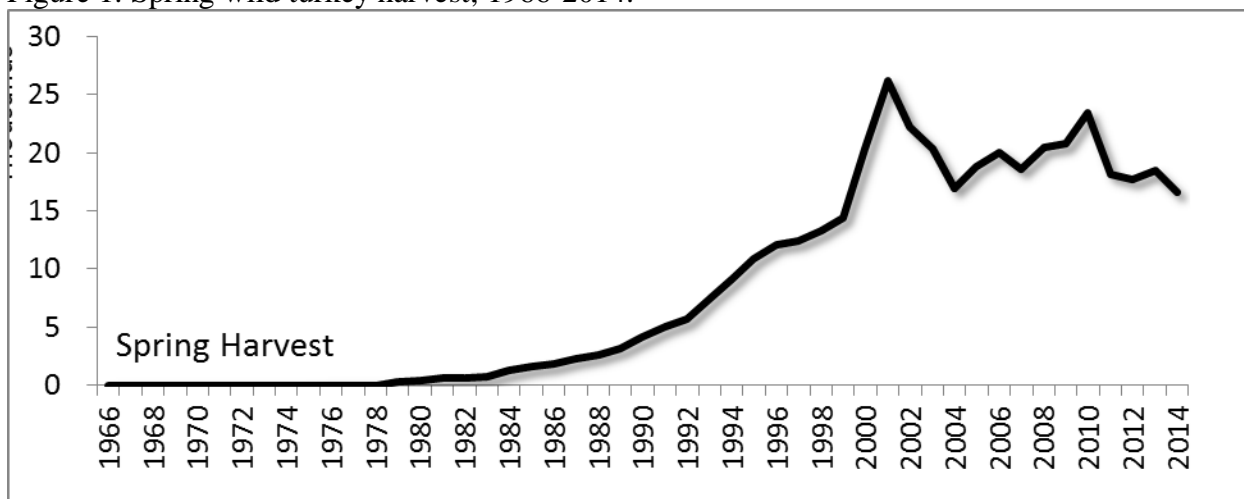
Ohio Department of Natural Resources

WILD TURKEY HUNTING SEASON RESULTS, SPRING 2014

Olentangy Wildlife Research Station
Delaware, OH 43015

Spring wild turkey hunters harvested 10 percent fewer turkeys in 2014 than 2013 (Fig. 1). Harvest during the two-day youth season was also lower in 2014, when 1,480 turkeys were harvested. The drop during the youth season is likely because of the Easter holiday. Youth hunters harvested 308 fewer turkeys during the Sunday of the 2014 youth season, a decline of 43 percent from 2013. An additional 15,088 turkeys were harvested during the four-week season open from April 22 through May 19 (-9 percent from 2013).

Figure 1. Spring wild turkey harvest, 1966-2014.

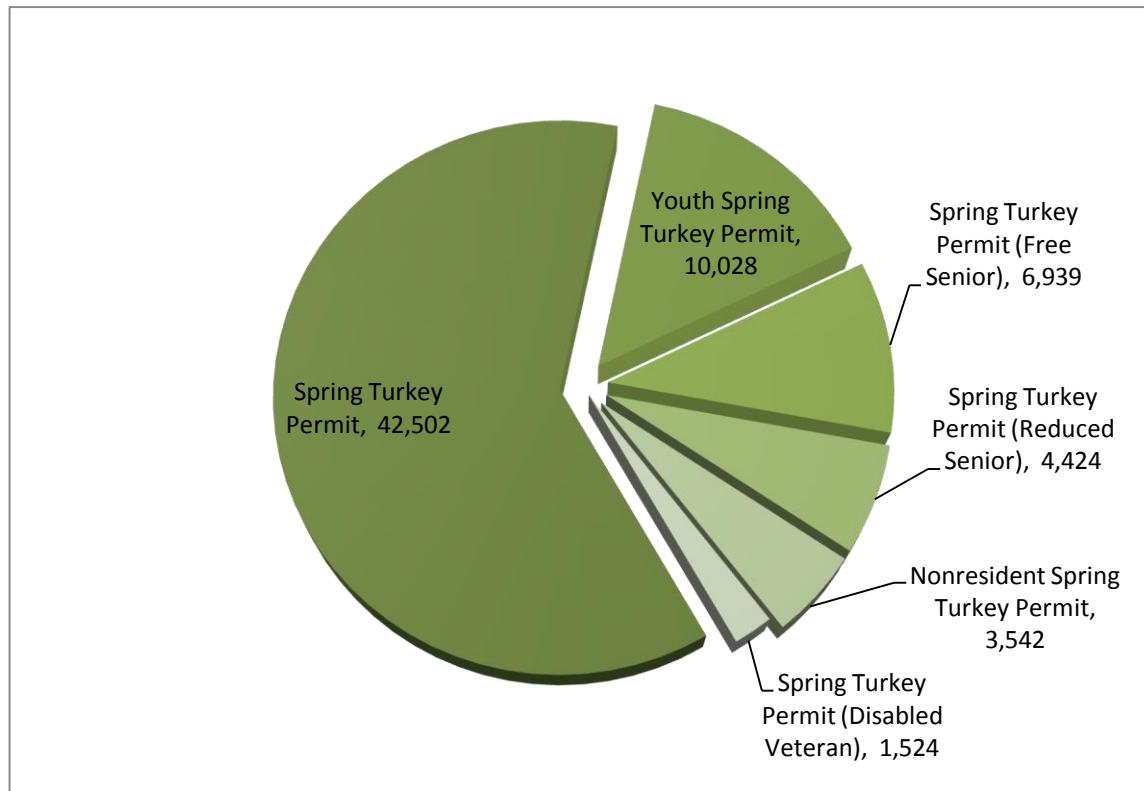


Most of the decline in harvest can be attributed to a drop in the harvest of jakes. Based on spur lengths reported by hunters, 1,405 less jakes were harvested in 2014 than 2013 (-24 percent). Harvest of mature gobblers declined less than 3 percent (435 birds) in 2014 when compared to 2013. The decline in jake harvest was unexpected because the 2013 summer brood surveys showed average reproduction.

Spring turkey permit sales dropped 6.7 percent in 2014 (Table 1). Resident adult hunters purchased the most spring turkey permits, followed by youth hunters (Fig. 2). However, nonresident hunters had the highest success rate (Fig. 3).

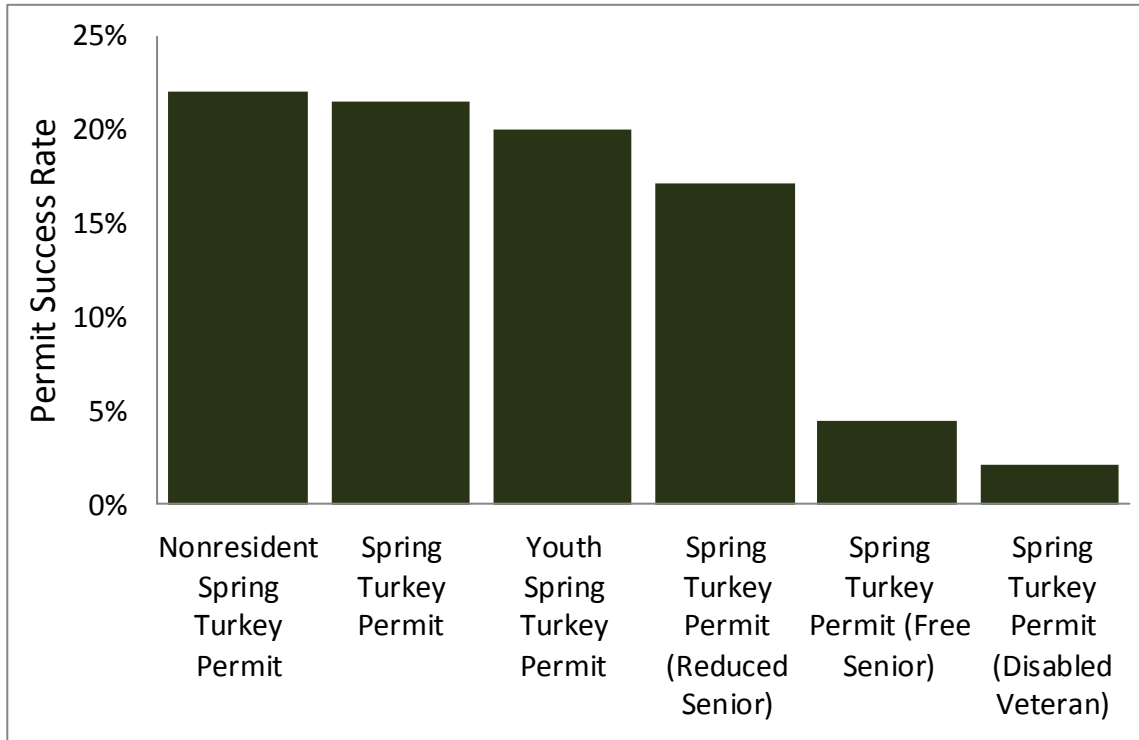
The eastern half of the state continues to be the best place to hunt turkeys in Ohio (Fig. 4). Ashtabula County led the state in 2014 harvest, followed by Guernsey, Muskingum, Coshocton, and Tuscarawas counties. The 2014 harvest declined in most counties, but a few areas did see an increase. Auglaize County saw the highest percent increase in harvest from 2013 (Fig. 5).

Figure 2. 2014 spring wild turkey permit sales by permit type.



Most hunters harvested a turkey on private land (90 percent); 10 percent harvested a turkey on public land. However, the number of turkeys harvested per square mile of public land was three times greater than on private land. Landowners harvested 3,579 gobblers, 22 percent of the total harvest.

Figure 3. Permit success rate for 2014 spring turkey season.



Hunters experienced the most success during the first half of the 2014 season, when 65 percent of the spring turkey harvest occurred. The two-day youth season accounted for 9 percent of the total harvest (Fig. 6).

Figure 6. Percent of total spring wild turkey harvest for each week and the youth season.

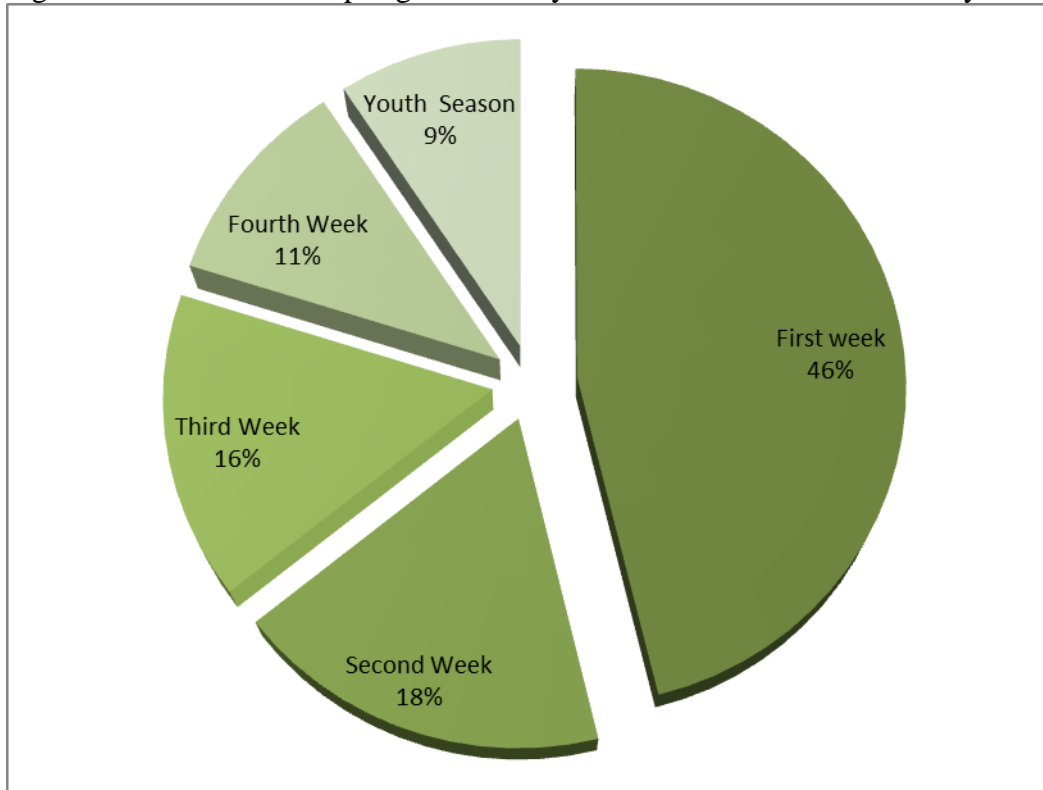


Table 1. Ohio's spring turkey season dates, permits sold, and harvest, 1966-2013.

Year	Season Dates	Open Counties	Bag Limit	Permit Fee	Permits Sold ^a	Total Harvest ^b
1966	05/04 – 05/07	9	1	Free	500	12
1967	05/03 – 05/06	9	1	Free	898	18
1968	05/08 – 05/11	9	1	Free	914	20
1969	05/07 – 05/10	9	1	Free	945	37
1970	04/29 – 05/02	14	1	Free	909	30
	05/06 – 05/09				896	36
1971	04/28 – 05/01	14	1	Free	1,000	37
	05/05 – 05/08				1,000	17
1972	05/03 – 05/06	14	1	\$5.35	917	32
	05/10 – 05/13				881	25
1973	05/02 – 05/05	14	1	\$5.35	1,034	39
	05/09 – 05/12				1,034	32
1974	05/01 – 05/04	14	1	\$10.50	999	61
	05/08 – 05/11				184	10
1975	04/28 – 05/03	14	1	\$10.50	996	75
	05/05 – 05/10				267	19
1976	04/26 – 05/08	14	1	\$10.50	1,471	139
1977	05/02 – 05/14	14	1	\$10.50	1,751	137
1978	05/01 – 05/13	18	1	\$10.50	2,000	147
1979	04/30 – 05/12	18	1	\$10.50	2,000	265
1980	04/21 – 05/03	20	1	\$10.75	2,097	387
1981	04/27 – 05/09	20	1	\$10.75	3,458	577
1982	04/26 – 05/08	20	1	\$10.75	4,262	651
1983	04/25 – 05/07	21	1	\$10.75	5,141	764
1984	04/23 – 05/12	31	1	\$10.75	6,935	1,233
1985	04/22 – 05/11	31	1	\$10.75	10,084	1,583
1986	04/28 – 05/17	31	1	\$10.75	11,913	1,816
1987	04/27 – 05/16	32	1	\$10.75	13,396	2,268
1988	04/25 – 05/14	32	1	\$11.00	16,208	2,629
1989	04/24 – 05/13	36	1	\$11.00	18,887	3,171
1990	04/23 – 05/12	37	1	\$16.00	19,613	4,096
1991	04/22 – 05/11	38	1	\$16.00	22,898	5,009
1992	04/27 – 05/16	38	1	\$16.00	28,974	5,678
1993	04/26 – 05/15	42	1	\$16.00	29,538	7,470
			2	\$32.00	4,106	
1994	04/25 – 05/14	44	1	\$16.00	29,334	9,098
			2	\$32.00	5,187	
1995	04/24 – 05/13	44	1	\$20.00	30,837	10,892
			2	\$40.00	6,136	
1996	04/22 – 05/11	46	1	\$20.00	31,003	12,098
			2	\$40.00	7,700	
1997	04/28 – 05/17	47	1	\$20.00	30,511	12,393
			2	\$40.00	8,130	
1998	04/27 – 05/16	50	1	\$20.00	31,037	13,251
			2	\$40.00	8,133	
1999	04/26 – 05/16	57	1	\$20.00	42,363	14,419
			2	\$40.00	7,846	
2000	04/24 – 05/14	88	1	\$20.00	49,982	20,276
			2	\$40.00	9,720	

Table 1. Continued.

Year	Season Dates	Open Counties	Bag Limit	Permit Fee	Permits Sold^a	Total Harvest^b
2001	04/23 – 05/13	88	1	\$20.00	54,841	26,156
			2	\$40.00	11,092	
2002	04/22 – 05/19	88	1	\$20.00	48,821	22,190
			2	\$40.00	24,633	
2003 ^c	04/28 – 05/25	88	2	\$20.00	94,989	20,368
2004	04/26 – 05/23	88	2	\$24.00	74,119	16,927
2005	04/18 – 05/15	88	2	\$24.00	85,053	18,833
2006	04/24 – 05/21	88	2	\$24.00	85,248	20,023
2007	04/23 – 05/20	88	2	\$24.00	75,408	18,584
2008	04/21 – 05/18	88	2	\$24.00	79,962	20,389
2009	04/20 – 05/17	88	2	\$24.00	81,049	20,710
2010	04/19 – 05/16	88	2	\$24.00	78,388	23,421
2011	04/18 – 05/15	88	2	\$24.00	74,957	18,162
2012	04/23 – 05/20	88	2	\$24.00	68,952	17,657
2013	4/22 – 5/19	88	2	\$24.00	72,330	18,409
2014	4/20 – 5/19	88	2	\$24.00	68,959	16,568

^aIncludes youth and senior spring turkey permits (Ohio residents 66 years of age and older).

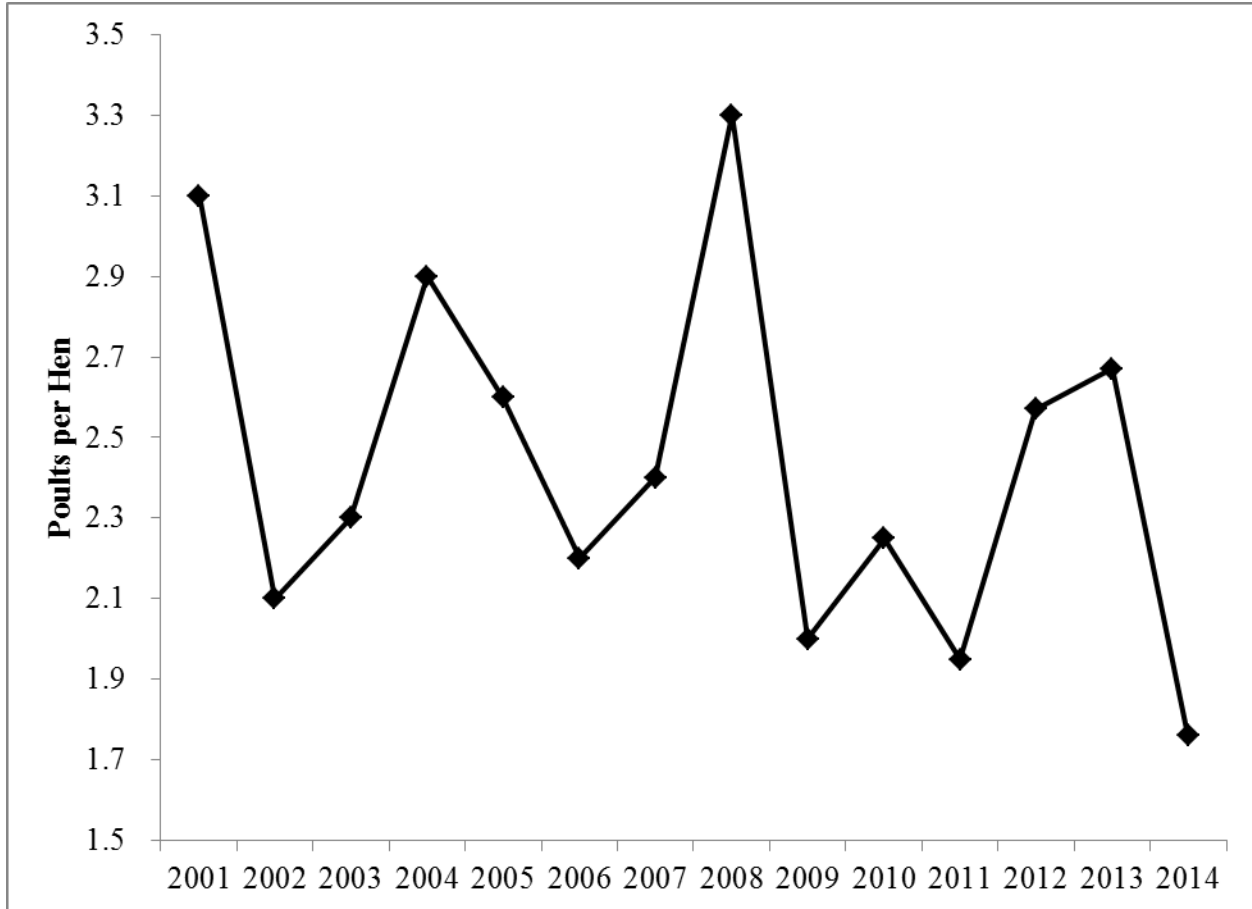
^bTotal recorded harvest by all hunter types (paid, youth, senior, and exempt).

^cThe special bonus wild turkey permit was eliminated in 2003 and hunters no longer could be classified as one-bird or two-bird permit holders.

2014 Brood Survey

The state wide brood survey index was 1.79 poult/hen. This is much lower than the long term average of 2.5 poult/hen (Figure 1). The poult:hen ratio was down in most counties in the state however, some counties did appear to have good reproduction (Figure 2).

Figure 1. Number of poults seen per hen during the statewide summer brood count survey (2001-2014).



South Dakota Game, Fish, and Parks 2014 WILD TURKEY STATUS REPORT

Population Status

Three subspecies (eastern, Rio Grande, and Merriam's turkeys) occur in the state at varying levels. Eastern turkeys are most common in the eastern riparian/cropland habitats. Rio Grande turkeys occur in smaller populations in eastern and south-central South Dakota. Merriam's turkeys primarily occur west of the Missouri River in prairie riparian and ponderosa pine habitats. In 2013, South Dakota Game, Fish, and Parks sold a total of 22,564 turkey hunting licenses (Fig. 1). The wild turkey harvest has continued to decrease (Fig. 2, 3, 4).

Fig. 1. Number of turkey licenses sold for the state of South Dakota from 1995-2013.

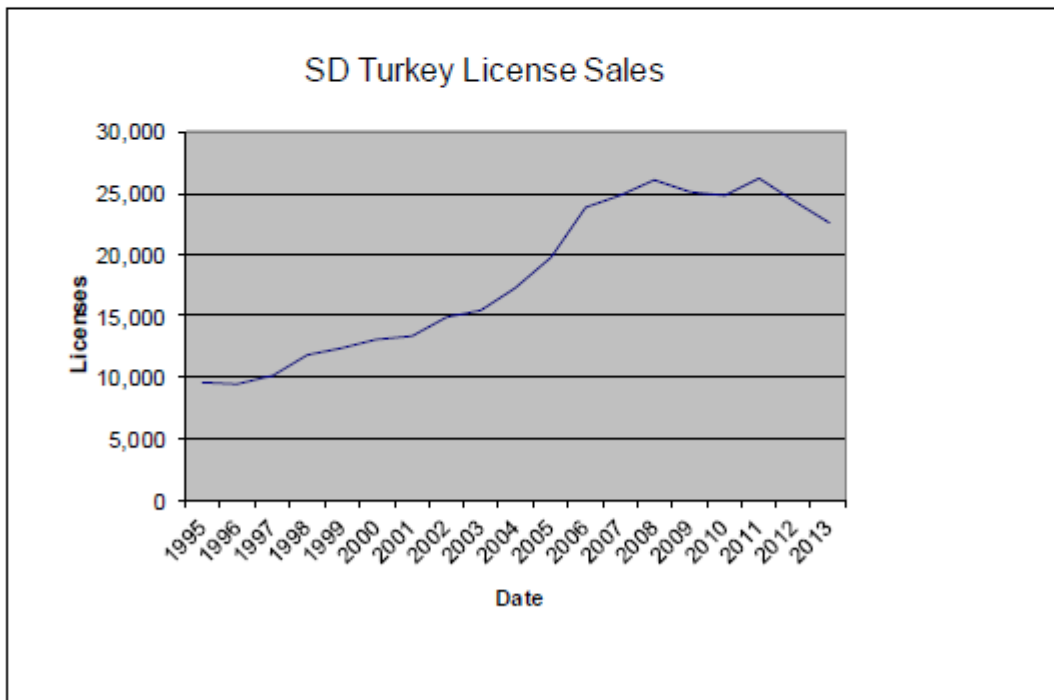


Fig. 2. State turkey harvest projections for South Dakota from 1995-2013.

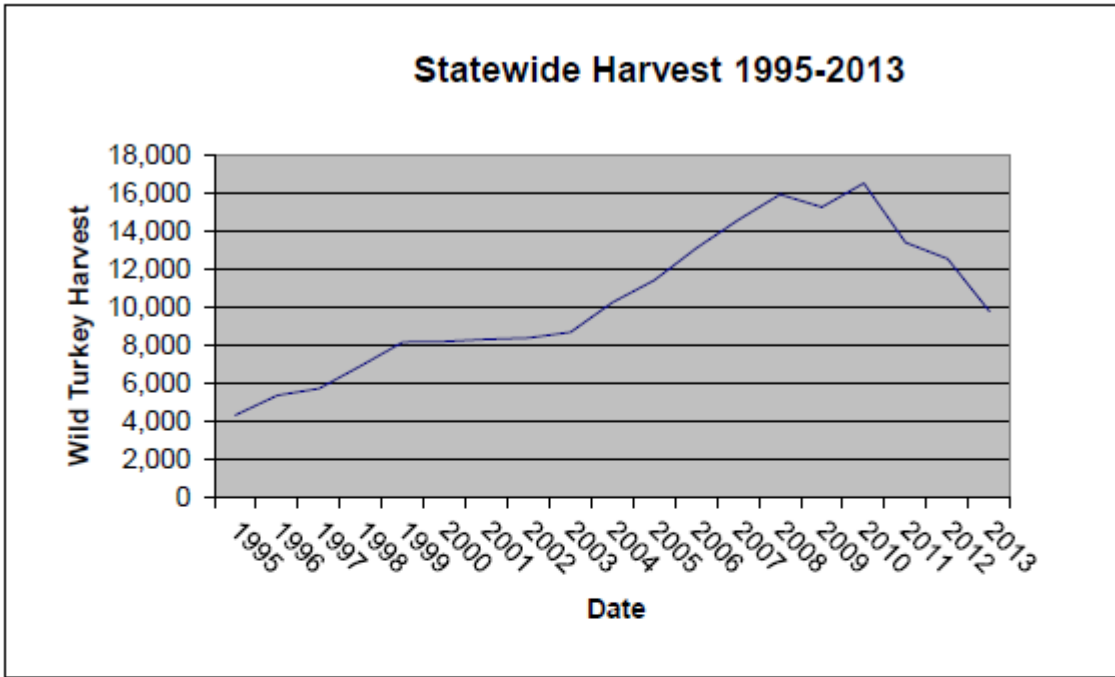


Fig. 3. Black Hills spring harvest projections from 1995-2013.

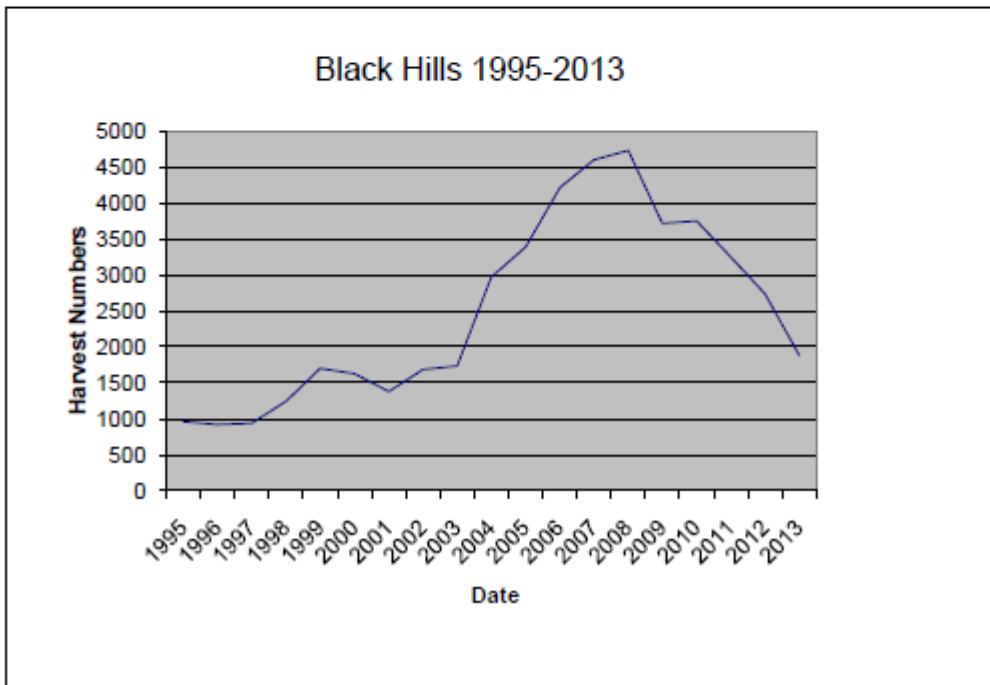
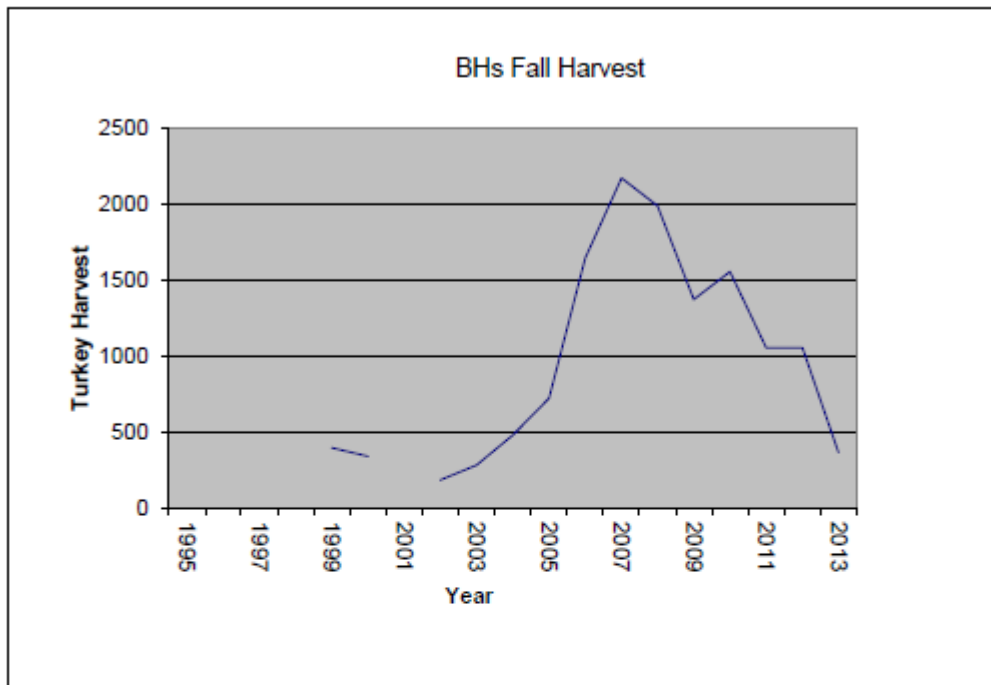


Fig. 4. Black Hills fall harvest projections from 1995-2013.



Trap and Transfer: Most trapping and transfer efforts occurred in the Black Hills in Region 1. We trapped and transferred depredation turkeys from ranch sites into the central Black Hills on public lands. These birds were causing landowner depredation primarily in the southern and eastern Black Hills. This year (2013-14) we moved roughly 40 turkeys that were causing depredation issues in Region 1. Utah Division of Natural Resources was working with Region 4 of SDGFP to obtain turkeys from northeast South Dakota but trapping efforts were limited due to poor winter conditions.

Surveys and Monitoring: From August 1 to September 30 we collect turkey brood data. We record all hens observed with or without broods and the number of poults in each brood during their routine field assignments during the allotted time period. Brood data will be used as auxiliary data to conduct statistical population reconstructions (SPR) of turkey populations.

We also collect winter flock count data at winter concentration sites for each region of the state during January through March. Field staff will attempt to find winter flocks throughout the region; each flock with will be counted for a total number birds and at

least a subsample of birds will be classified by gender and age (male versus female and subadult versus adult). If at least a subsample of birds is classified correctly, each flock only needs to be counted once per winter. Most flock counts will be counted from the ground but when practical, aircraft will be used to count birds found in open areas. Data will be analyzed initially by region and if enough data are collected by hunting unit the analysis can be conducted at that level. Age and gender data are needed to conduct statistical population reconstructions (SPR) of turkey populations.

In 2012-13, the following were results for winter flock counts by region.

Region 1: 448 were classified by age and gender (501 total were counted)
 Region 2: 342 were classified by age and gender (831 total were counted)
 Region 3: 189 were classified by age and gender (200 total were counted)
 Region 4: 194 were classified by age and gender (633 total were counted)

Harvest data and monitoring:

We have initiated a new approach for collecting data from fall harvest of turkeys. We are now collecting feather data to determine age and gender at harvest to be used in a statistical population reconstruction (SPR) for each region (Regions 1-4). The following are some summary statistics for fall of 2013 by Region:

Region 1 Black Hills: male:female ratio= 1.15, juvenile female:adult female ratio= 1.08
 Region 1 Prairie: male:female ratio= 1.28, juvenile female:adult female ratio= 0.60
 Region 2: male:female ratio= 0.92, juvenile female:adult female ratio= 0.48
 Region 3: male:female ratio= 1.25, juvenile female:adult female ratio= 0.25
 Region 4: male:female ratio= 0.95, juvenile female:adult female ratio= 0.27

Demographic Model for the Black Hills:

We have also created a demographic prediction model based on previous research from the Black Hills. We have incorporated precipitation data and correlated that information with reproduction and poult survival. We have broken out the results by southern, central, and the northern Black Hills. The results for these models are presented below.

RESULTS

THE SOUTHERN BLACK HILLS MODEL

After running 100,000 simulations that asymptotic growth rate had a mean lambda of 1.17. The standard deviation was 0.14 (C.I. = 0.9-1.4). Abundance appears to be increasing for the southern Black Hills based on a 2013 average prediction, but unfortunately the confidence interval does overlap 1.0.

The proportion of variation in lambda explained by poult survival being raised by adult females from 0-14 days was 0.03. The proportion of variation in lambda explained from

hen nesting success by adult females was 0.02. The proportion of variation in lambda explained by adult hen survival was 0.55.

THE CENTRAL BLACK HILLS MODEL

The central Black Hills model also uses additional demographic information taken from Rumble and Hodorff 1993 (*Journal of Wildlife Management*) and Rumble et al. 2003 (*Intermountain Journal of Sciences*) from the central Black Hills. After running 100,000 simulations that asymptotic growth rate had a mean lambda of 0.96. The standard deviation was 0.12 (C.I. = 0.73-1.2). Abundance appears to be slightly decreasing for the central Black Hills based on a 2013 average prediction, but unfortunately the confidence interval does overlap 1.0.

The proportion of variation in lambda explained by poult survival being raised by adult females from 0-14 days was 0.01. The proportion of variation in lambda explained from hen nesting success by adult females was 0.04. The proportion of variation in lambda explained by adult hen survival was 0.72.

THE NORTHERN BLACK HILLS MODEL

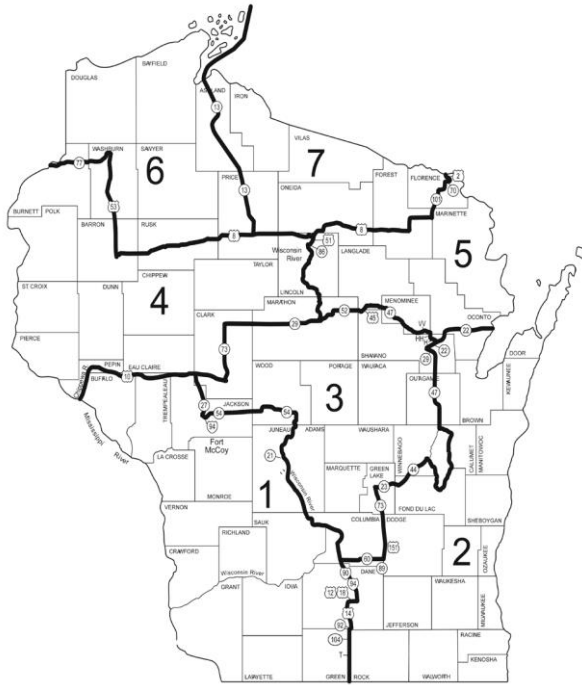
After running 100,000 simulations that asymptotic growth rate had a mean lambda of 1.00. The standard deviation was 0.16 (C.I. = 0.69-1.31). Abundance appears to be stagnant for the northern Black Hills based on a 2013 average prediction.

The proportion of variation in lambda explained by poult survival being raised by adult females from 0-14 days was 0.20. The proportion of variation in lambda explained from hen nesting success by adult females was 0.01. The proportion of variation in lambda explained by adult hen survival was 0.46.

Wisconsin Department of Natural Resources 2014 Wild Turkey Status Report by Scott Walter and Krista McGinley, Wisconsin DNR

WISCONSIN TURKEY SEASON STRUCTURE

Zones: Wisconsin manages and monitors turkeys according to seven specific Turkey Management Zones (TMZs). Zones reflect general similarities in land cover and use, turkey habitat (relative dispersion of open and forested habitats), turkey population size, and climate (Figure 1). Seventeen specific state park zones were eliminated, beginning with the spring 2015 season, and are now part of the larger zone in which they lie.



Permit allocation: Zone-specific permit levels are determined by the WDNR Turkey Advisory Committee, which includes representation from relevant partner groups. Permit levels are based on recent trends in harvest and permit success rates, local turkey abundance as indexed by habitat availability, brood counts, recent weather, and field observations. Permits are allocated via a drawing system during both the spring and fall seasons. Permits remaining unallocated following the drawing are sold over-the-counter. Landowners and those not drawing a permit in previous year(s) are given preference.

Spring Season: Six 7-day time periods, with the first season opening statewide on the Wednesday nearest April 13th. Gobblers or bearded hens only.

Figure 1. Wisconsin's Turkey Management Zones.

Fall Season: Opens concurrent with small game and archery seasons, on the Saturday nearest September 15th, and closes on the Friday prior to the 9-day gun deer season in November. An extended season in zones 1-5 reopens on the Monday following the 9-day gun deer season and runs through December 31st. Either sex, with one turkey per permit.

WISCONSIN TURKEY HARVEST SUMMARY

Spring Season: Wisconsin's wild turkey population expanded quickly from initial releases in 1976 in the southwestern part of the state, with spring seasons opening up less than a decade after initial colonization in the area. The first modern spring turkey season in Wisconsin took place in 1983, and included three separate 5-day time periods, with the first time period commencing on the Wednesday nearest April 13th. Over the ensuing quarter century, turkeys and turkey hunting expanded across the state, three additional time periods were added, and the time periods were lengthened to 7 days. The first statewide spring season took place in 2006.

During the inaugural spring season in 1983, 182 turkeys were harvested by 1,200 hunters in 4 southwestern zones – a permit success rate of 15%. Statewide harvest increased rapidly over the following quarter century as turkeys expanded their range and new zones were opened to turkey hunting. Spring harvest peaked at 52,880 turkeys in 2008, and then declined 24% by 2011, when 40,133 birds were registered. While this decline was likely in part due to a recent shallow decline in permit sales, it also probably reflected impacts of wet spring and harsh winter weather during this 3-year period on turkey populations across the state, and perhaps slight population declines as established turkey populations have begun to stabilize near carrying capacity following the “overshoot” phenomena of exponentially-growing populations. Recent harvests have stabilized at ~40,000 turkeys, with annual variations driven largely by weather conditions during the early time periods. Prolonged snow/cold and/or wet weather during the early time periods reduces hunter effort and subsequent harvest, but impacts on overall harvest are moderated by the availability of over-the-counter permits during later time periods; hunters unsuccessful during early seasons seem more inclined to purchase tags later in the season, and increased harvest later on offsets relatively low early-season harvest due to poor hunting conditions.

Table 1. Spring turkey harvest in Wisconsin, 1983 – 2014.

Year	Permits Issued	Harvest	Success Rate
1983	1,200	182	15.17%
1984	1,950	303	15.54%
1985	2,025	496	24.49%
1986	2,675	793	21.58%
1987	6,040	1,478	24.47%
1988	11,070	2,486	22.46%
1989	21,280	4,400	20.68%
1990	29,877	6,465	21.64%
1991	37,414	6,846	18.30%
1992	43,925	8,798	20.03%
1993	61,767	12,316	19.94%
1994	71,420	12,637	17.69%
1995	68,588	15,323	22.34%
1996	75,812	18,000	23.74%
1997	92,734	20,992	22.64%
1998	101,141	28,338	28.02%
1999	112,256	33,168	29.55%
2000	132,318	38,686	29.24%
2001	151,522	39,211	25.88%
2002	160,101	39,336	24.57%
2003	169,277	42,970	25.38%
2004	189,908	47,477	25.00%
2005	193,826	46,183	23.83%
2006	200,869	46,662	23.23%
2007	205,306	52,428	25.54%
2008	208,972	52,880	25.30%
2009	218,133	52,581	24.11%
2010	214,356	47,722	22.26%
2011	210,384	40,133	19.08%
2012	201,984	42,612	21.1%

2013	211,307	37,804	17.9%
2014	210,496	41,815	19.9%

Hunters are required to list both zone- and time period-specific preferences when they apply for spring turkey permits in Wisconsin, and hunters show a strong preference for hunting during early time periods. Permits are therefore limited during early time periods in many zones, whereas over-the-counter permits are available for later time periods in most zones. Overall, hunter effort and subsequent harvest tends to be higher during early time periods. Harvest and permit success are also higher in southern zones (Spring 2014, figure 2). This reflects both more limited permits in northern zones (e.g., 6 and 7) and less abundant quality habitat with fewer turkeys.

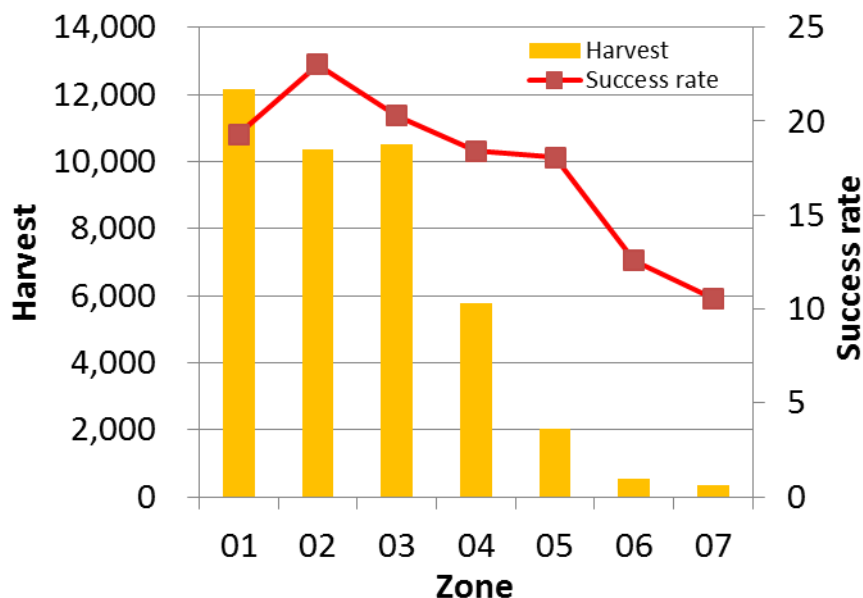


Figure 2. Zone-specific turkey harvest and permit success, 2014.

Fall Season: Statewide harvest during the fall season increased from the 1,570 turkeys registered during the first season in 1989 to a peak of 12,554 in 2003. Harvest remained high (>10,000) and fairly stable from 1999 through 2008, but has since tapered off significantly, dropping to only 5,433 turkeys in 2011. This was the lowest fall harvest since 1994, when fall turkey hunting was still confined largely to the southern half of the state. The dramatic reduction in fall harvest may partially reflect a declining turkey population from 2008-2011, but declining hunter participation in the fall hunt is certainly a driving factor. The total number of permits issued for the fall season declined steeply over this time frame; the number of permits issued in 2011 was 36% lower than the number issued as recently as 2005. As well, hunters who purchase a fall permit may be less dedicated to pursuing turkeys than during previous years. Fall Turkey Hunter Survey data from 2006-2011 reveal that nearly one-third of individuals that purchase fall turkey permits do not hunt turkeys. As well, an increasing percentage of respondents suggest that they hunt turkeys only “opportunistically while pursuing other game” during the fall; this percentage increased from ~10% in 2006 to ~30% from 2009-2011. The number of fall turkey hunting applications increased during both 2013 and 2014, but it is not known if this reflects an increase in dedicated turkey hunters or additional hunters seeking a turkey permit in case they encounter turkeys while pursuing other game.

Table 2. *Fall turkey harvest in Wisconsin, 1989 – 2013*

Year	Permits Issued	Harvest	Success Rate
1989	7,260	1,521	20.95%
1990	12,465	3,266	26.20%
1991	16,668	2,878	17.27%
1992	24,997	4,983	19.93%
1993	31,449	5,502	17.49%
1994	17,889	3,896	21.78%
1995	28,555	6,172	21.61%
1996	30,554	6,305	20.64%
1997	32,569	6,004	18.43%
1998	40,750	8,843	21.70%
1999	55,479	10,802	19.47%
2000	69,556	11,263	16.19%
2001	71,601	11,029	15.40%
2002	75,040	10,860	14.47%
2003	78,831	12,554	15.93%
2004	78,900	10,216	12.95%
2005	85,678	10,591	12.36%
2006	78,782	12,033	15.27%
2007	80,382	12,010	14.94%
2008	76,448	10,693	13.99%
2009	68,814	8,028	11.67%
2010	61,567	7,394	12.01%
2011	54,949	5,523	10.10%
2012	54,500	7,054	12.9%
2013	64,983	4,633	7.1%

SUMMARY OF RECENT TURKEY HUNTING ACCIDENTS/INCIDENTS

There were two hunting incidents during the spring 2013 wild turkey hunting season, neither of which was fatal. In the first incident, the shooter was a 27-year-old male Hunter Education graduate and the victim was a 54-year-old male Hunter Education graduate; the shooter and victim were not hunting together. The shooter was hunting turkey and mistook the victim for a turkey. The victim took #5 shot from 29 yards to the torso, shoulder, neck, and face. In the second incident, the shooter was a 22-year-old male Hunter Education graduate and the victim was a 47-year-old male Hunter Education graduate; the shooter and victim were hunting together. The shooter was unaware of the victim's exact location and mistook the victim's red shirt for a turkey. The victim took seven pellets of #5 shot from approximately 76 yards to the face and neck. No incidents were reported during the fall 2013 season. The spring of 2014 season included report of only a single turkey hunting accident.

RESULTS OF THE 2013 SPRING TURKEY HUNTER QUESTIONNAIRE (SPRING 2014 SURVEY NOT YET SUMMARIZED).

A sample of hunter names and addresses were randomly drawn from the current spring turkey hunter permit file. A survey was mailed to ≈10,000 spring turkey hunters after the completion of the spring turkey season. The questionnaire was mailed in proportion to the number of permits distributed in each

zone. The questionnaire asked each hunter specific questions about their spring turkey hunting experience. A second mailing was made to 5,000 of the non-respondents. Data from all returned questionnaires were summarized using the Statistical Analysis System (SAS).

A total of 4,566 spring turkey hunter surveys were returned. After duplicates were removed, the resulting response rate was 46%. The proportion of respondents who applied with landowner preference for this spring's turkey hunt permit was 17.9%. Statewide, 31.6% of the respondents have 0-5 years of spring turkey hunting experience and 22.3% have 16+ years of experience.

Most spring turkey hunters are "Very Satisfied" (33.2%) or "Somewhat satisfied" (21.8%) with the current spring turkey hunting season framework of 6, 7-day time period, 7 zones, a limited draw for first permits, and over-the-counter sale of unissued permits. Only 16% of hunters are either "Somewhat dissatisfied" or "Very dissatisfied". More people feel that the "current permit allocations process affords them a fair chance at receiving a permit"; "feel that having separate, 6-week time periods is important in maintaining a quality spring turkey hunting experience"; prefer the "current six, 1-week periods"; and "feel the current 7-zone system affords them sufficient opportunity to hunt different locations."

Statewide, 14.5% of survey respondents participated in the Youth Turkey Hunt as a youth or chaperone; of those, 19.7% reported a turkey being harvested.

All surveyed hunters were asked who introduced them to turkey hunting; 36.7% introduced themselves, while 31.0% were introduced by a friend.

Statewide, 83.3% of the respondents hunted turkeys this spring. Of those who did not hunt, 42.6% bought a 2013 Wild Turkey Stamp. The success rate for active hunters who received a harvest permit was 33.2%. This success rate may be high because of response and prestige biases of a mail survey. The spring turkey harvest registration data success rate (17.4%) is uncorrected for non-hunters and is probably a low estimate.

Surveyed hunters were asked how difficult it was to find a place to hunt in the spring of 2013, and 86.8% of the respondents said it was "very easy" or "somewhat easy". Spring turkey hunters were also asked to report the days on which they hunted. Hunting pressure was relatively constant Wednesday through Sunday, with the most pressure on Saturday. The new additional days, Monday and Tuesday, had the least hunting pressure. Hunters averaged 3.1 days afield perusing turkeys.

Statewide, the mean number of gobblers/jakes seen by hunters was 4.2; the mean number of gobblers/jakes heard by hunters was 4.8; the mean number of hens seen was 7.8, and the mean number of hens heard was 4.6. Most respondents that had a shot at a turkey did not shoot at the first turkey which presented an opportunity; 66.1% reported waiting for a better shot, or for an adult gobbler. Of the respondents that harvested a turkey, 26.2% with one tag harvested one turkey; 33.2% with two tags harvested one turkey, and 10.5% harvested two turkeys; 26.4% with three or more tags harvested one turkey, 23.9% harvested two turkeys, and 12.4% harvested three or more turkeys. Surveyed hunters were asked if they hit any turkeys that they were unable to retrieve; 3.4% were unable to find their bird, 87 hunters reported hitting one turkey, and 4 hunters reported hitting 2 or more turkeys. Ninety-six percent of turkey hunters used a gun "most" while hunting, while a gun was used 98.1% of the time to kill a turkey.

The percent of time turkey hunters spent on private land varied by TMZ from 57.7% in TMZ 7 to 88.2% in TMZ 4. Of the hunters on private land, 90.2% obtain access by either owning the land, hunting on a

family member or relative's land, or hunting a friend of neighbor's land. Three percent obtain access via a public access program, of which most was Managed Forest Law. Nineteen percent (18.5%) of hunters responded to "other hunters kept me from hunting where I wanted to" with "definitely yes" or "somewhat." Similarly, fourteen percent (14.4%) of respondents answered "there was too much competition from other hunters where I hunted" with "definitely yes" or "somewhat." Only 11.3% of the respondents indicated that other hunters interfered with their chance to bag a bird.

Overall, 35.7% of respondents rated their spring turkey hunting experience as "very high" or "fairly high," while 32.3% rated their hunt as "fairly low" or "very low". The most important factors that influenced respondents' perceptions of a quality hunt were "seeing turkeys/calling birds in/hearing gobbling" and "an opportunity to kill a turkey". The least important factor was "killing a turkey".

Most respondents (44.8%) feel that turkey numbers in the zones they hunted in the spring stayed the same relative to the year before. More than four times as many hunters would like to see the number of permits available for the zone(s) they hunted stay the same as opposed to increased.

Respondents were asked to rate their overall satisfaction with spring turkey hunting in Wisconsin on a scale of 1 to 10, with 10 being the best and 1 being the worst; statewide, they ranked their overall satisfaction level at 6.8.

REVISION OF THE WISCONSIN WILD TURKEY MANAGEMENT PLAN

Following the successful reintroduction of wild turkeys to Wisconsin in the 1970s, turkeys have expanded their range so that they now occupy all counties in the state, and spring and fall turkey hunting have become very popular outdoor activities. The current Wisconsin Wild Turkey Management Plan, written in 1996, needs to be revised to include treatment of contemporary issues related to turkey management in the state. A critical part of the revision process includes soliciting, gathering, and analyzing input from the public regarding challenges and opportunities in turkey management and hunting in Wisconsin. During late April and early May of 2012, eleven public input sessions were held around the state, during which attendees were presented with background information and asked to complete a survey that addressed important issues related to the future direction of turkey management. The survey was also available online through the end of May. A total of 2,124 surveys were completed (2,047 submitted online; 77 from in-person sessions). Information gleaned from this survey will help all of the partners involved in managing our state's turkey flock in developing a plan that protects the turkey resource, but also optimizes recreational opportunities for outdoor enthusiasts. A draft of the revised plan is currently undergoing internal review, with hopes of final approval and release in spring 2015. The plan will provide both a set of goals and objectives to clarify our approach to harvest, population, and habitat management and public outreach/engagement for the next decade, but also will be produced in a non-technical fashion so as to provide a transparent view of the history of our turkey management program for interested citizens.