2013

Missouri Wild Turkey Harvest and Population Status Report

Missouri Department of Conservation

Resource Science Division

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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, turkey populations reached their 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. Turkey production in these regions has improved during the last several years, but regional populations have not experienced the high 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. Turkey numbers, however, 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. The population decline that followed, however, 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. Turkey numbers in much of the Ozarks remain more than a third less than numbers observed a decade ago despite inmprovements in production.

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 turkey production.

Missouri's turkey population has experienced a similar trend of decreased abundance since the population peaks observed 10-15 years ago despite some regional variation. This decline is a result of a declining trend in turkey production as shown by results of the Missouri Department of Conservation's (MDC) Wild Turkey Brood Survey. During 2011 and 2012, wild turkey production improved throughout most of Missouri. Although the improved hatches of 2011 and 2012 represented considerable improvements from those 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, 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.

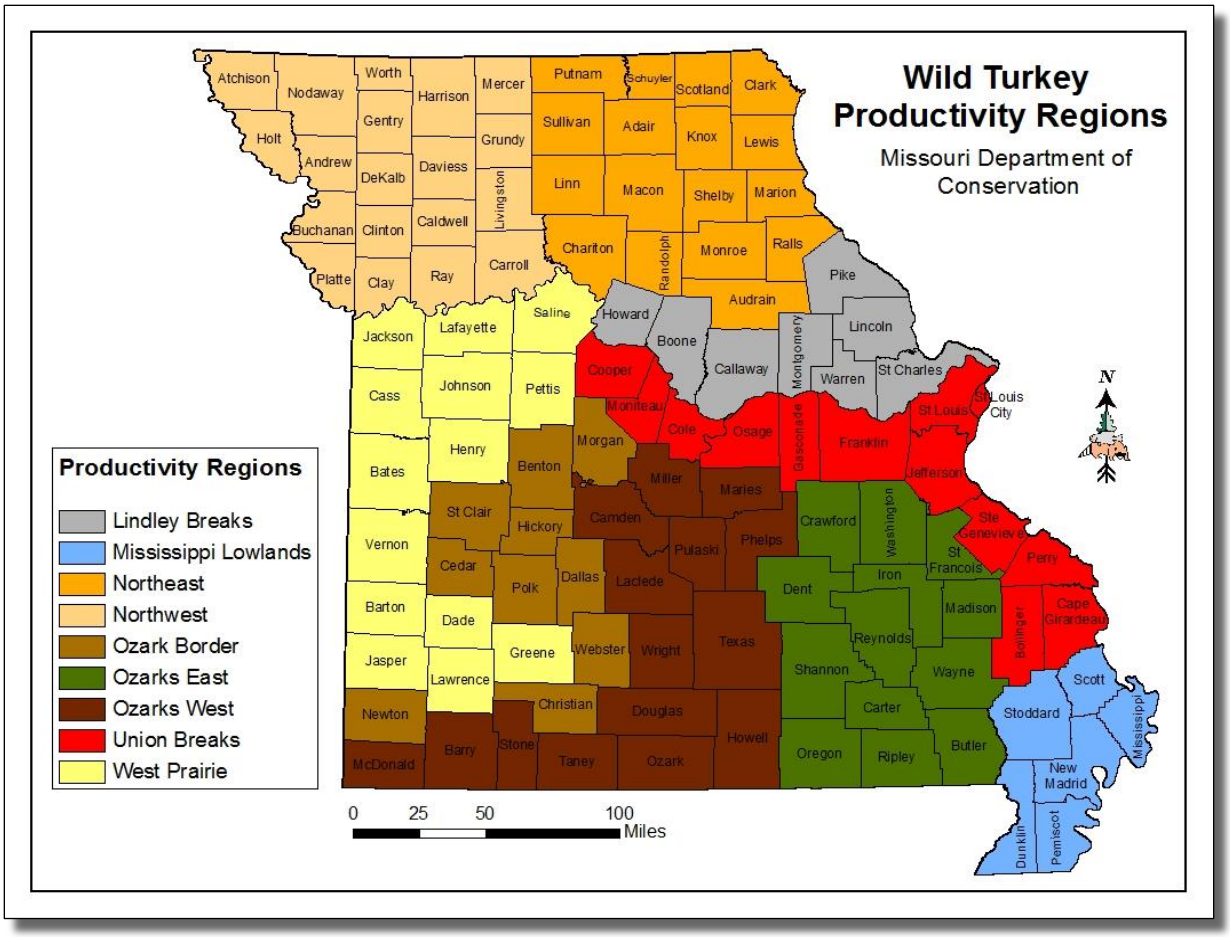

Figure 1. Turkey Productivity Regions in Missouri. Each region consists of counties grouped by similar land cover composition.

By analyzing data collected during the survey, 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 poult-to-hen ratio, which is the average number of poults per hen. The poult-to-hen ratio includes observations of hens observed with a brood and those observed without a brood. 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.

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	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[a]	**37%**	**4.1**	**1.3**	**0.69**

[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 3. Index (poult-to-hen ratio) of Missouri turkey production listed 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[a]	**1.3**	**-24%**	**-7%**	**-7%**	**-24%**

[a] 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.

Declines in turkey production following peak population numbers could be indicative of a density-dependent effect on production. As Missouri's wild turkey population has matured through time, the reproductive potential of the population has declined as well. Fortunately, with the number of turkeys currently on Missouri's landscape, poult-to-hen ratios do not need to be as high as they were during the 1970s and 1980s to sustain the population.

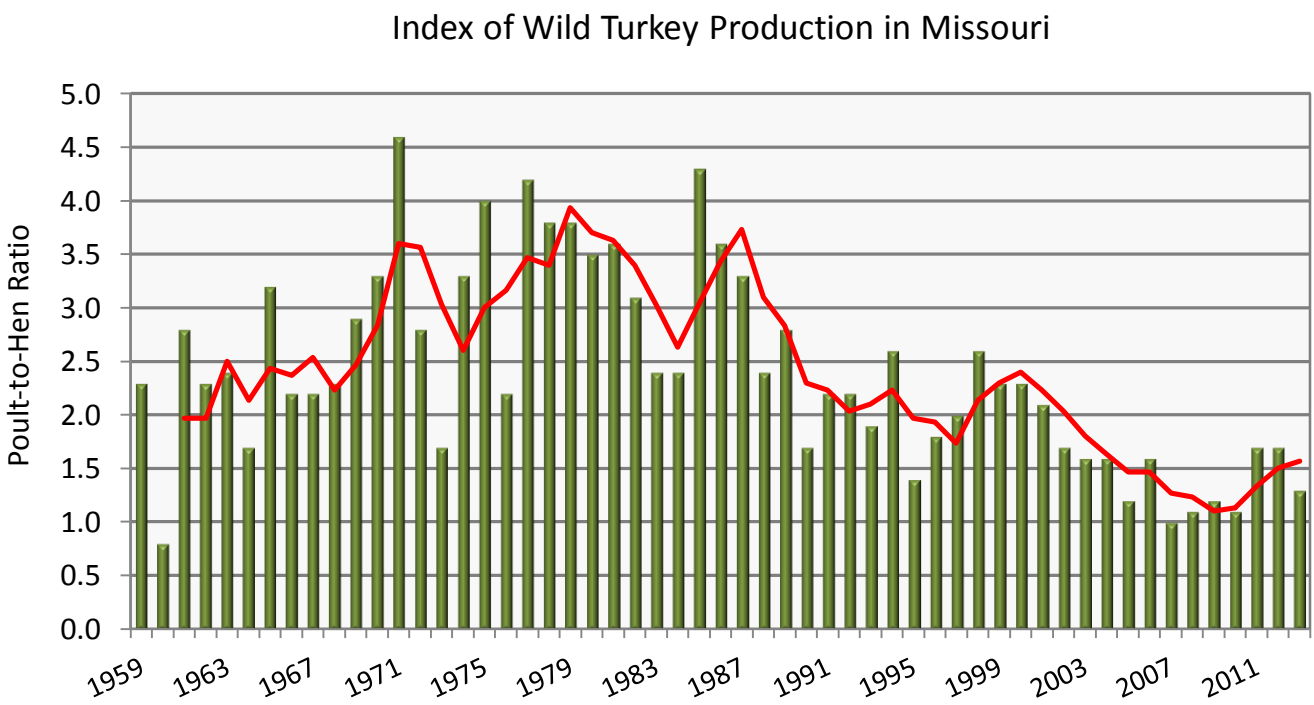

Figure 2. Missouri statewide poult-to-hen ratios derived from the Wild Turkey Brood Survey conducted in June, July, and August, 1959-2013. Trendline (red) displays 3-year moving average.

HARVEST

2013 Spring Turkey Season

During the 2013 youth spring turkey season, which took place on April 6-7, hunters harvested 3,915 turkeys. This harvest total represents a 9% decrease from the 2012 youth season harvest and was 9% higher than the previous 5-year average. The 2013 youth season harvest was the third highest since the season was initiated in 2001. Hunters harvested 42,220 turkeys during the 21-day regular spring turkey season, which ran from April 15 – May 5. This harvest total represents a 4% increase from the 2012 regular season harvest, and is 2% higher than the previous 5-year average.

Juvenile male turkeys represented 18% of the regular season harvest, which is 15% lower than the previous 5-year average. The abundance of 2-year-old male turkeys resulting from the 2011 hatch may have reduced the harvest of juvenile males, causing divergence in the relationship between the percentage of juvenile males harvested and the previous year's poult-to-hen ratio (Figure 3). The total 2013 spring harvest, including both the youth and regular seasons, was 46,141. This harvest total represents a 3% increase from the 2012 harvest, and is 3% higher than the previous 5-year average (Table 4). Counties with the highest total spring harvest in 2013 were Franklin, Texas, and Callaway, where 1102, 937, and 786 turkeys were harvested, respectively (Figure 4).

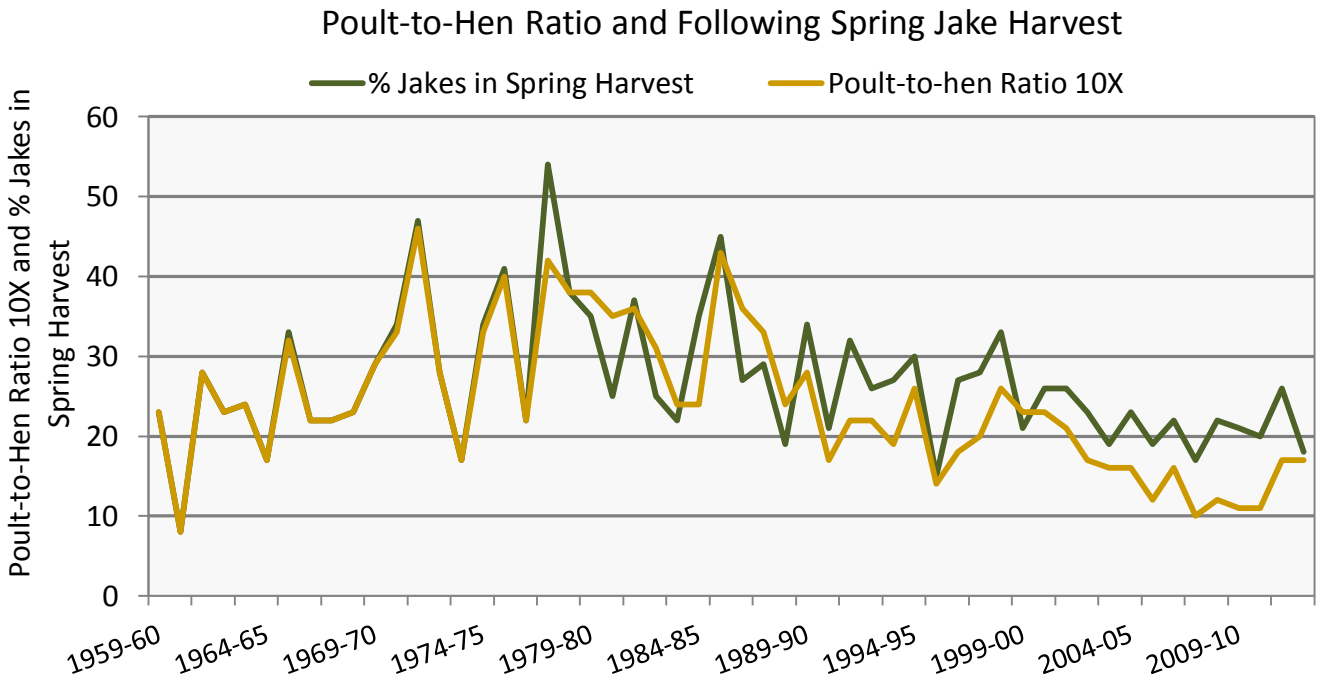

Figure 3. Missouri's statewide poult-to-hen ratio multiplied by 10, compared with the percentage of jakes in the following year's spring harvest, 1959-2013.

Table 4. Total spring turkey harvest (regular and youth seasons) and permit sales[a] in Missouri, 1960-2013.

Year	Spring Harvest	% Change From Previous Year	Spring Permit Sales[a]	% Change From Previous Year
1960[b]	94	n/a	698	n/a
1961	154	+63.8	1,001	+43.4
1962	183	+18.8	1,400	+39.9
1963	357	+95.1	1,778	+27.0
1964	369	+3.4	2,958	+66.4
1965	476	+29.0	3,099	+4.8
1966	572	+20.2	4,873	+57.2
1967[c]	1,191	+108.2	6,702	+37.5
1968	1,270	+6.6	8,102	+20.9
1969	959	-24.5	7,577	-6.5
1970	1,598	+66.6	10,072	+32.9
1971	2,864	+79.2	12,306	+22.2
1972[d]	4,456	+55.6	20,077	+63.1
1973[e]	5,724	+28.5	29,633	+47.6
1974	5,286	-7.7	26,363	-11.0
1975	5,583	+5.6	28,621	+8.6
1976	7,851	+40.6	35,932	+25.5
1977	9,966	+26.9	36,596	+1.8
1978	10,203	+2.4	42,244	+15.4
1979	13,741	+34.7	46,008	+8.9
1980	16,722	+21.7	56,133	+22.0
1981	22,319	+33.5	63,914	+13.9
1982	17,744	-20.5	67,150	+5.1
1983	19,063	+7.4	73,347	+9.2
1984	19,317	+1.3	76,053	+3.7

[a] Does not include no-cost landowner permits
[b] 3-day season with 1-bird bag limit
[c] Season length increased to 7 days
[d] Season length increased to 14 days
[e] Bag limit increased to 2 turkeys

Table 4. Continued.

Year	Spring Harvest	% Change From Previous Year	Spring Permit Sales[a]	% Change From Previous Year
1985	24,770	+26.6	69,945	-8.0
1986	30,965	+25.0	77,972	+11.5
1987	35,951	+16.1	85,723	+9.9
1988	33,187	-7.7	94,301	+10.0
1989	35,618	+7.3	92,901	-1.5
1990	30,056	-15.6	92,093	-0.9
1991	32,237	+7.3	89,077	-3.3
1992	33,035	+2.5	89,803	+0.8
1993	34,354	+4.0	89,899	+0.1
1994	37,721	+9.8	90,810	0.0
1995	37,472	-1.2	99,412	+8.8
1996	37,708	+0.3	99,879	+0.5
1997	33,216	-12.4	99,933	+0.1
1998[f]	48,462	+45.9	105,518	+5.6
1999	50,299	+3.8	110,939	+5.1
2000	56,841	+13.0	115,190	+3.8
2001[g]	57,842	+1.7	117,736	+2.2
2002	57,034	-1.3	125,157	+6.3
2003	58,421	+2.4	130,021	+3.8
2004	60,744	+3.9	124,533	-4.2
2005	57,743	-5.2	120,215	-3.5
2006	54,712	-5.2	114,529	-4.8
2007	48,472	-11.0	115,897	+1.2
2008	46,134	-4.4	115,047	-0.7
2009	44,713	-3.5	112,579	-2.1
2010	46,194	+3.3	105,501	-6.3
2011	42,220	-8.6	101,106	-4.2
2012	44,766	+6.0	101,534	+0.4

[f] Season length increased to 21 days
[g] 2-day youth season initiated

Table 4. Continued.

Year	Spring Harvest	% Change From Previous Year	Spring Permit Sales[a]	% Change From Previous Year
2013	46,141	+3.0	115,020	+13.3

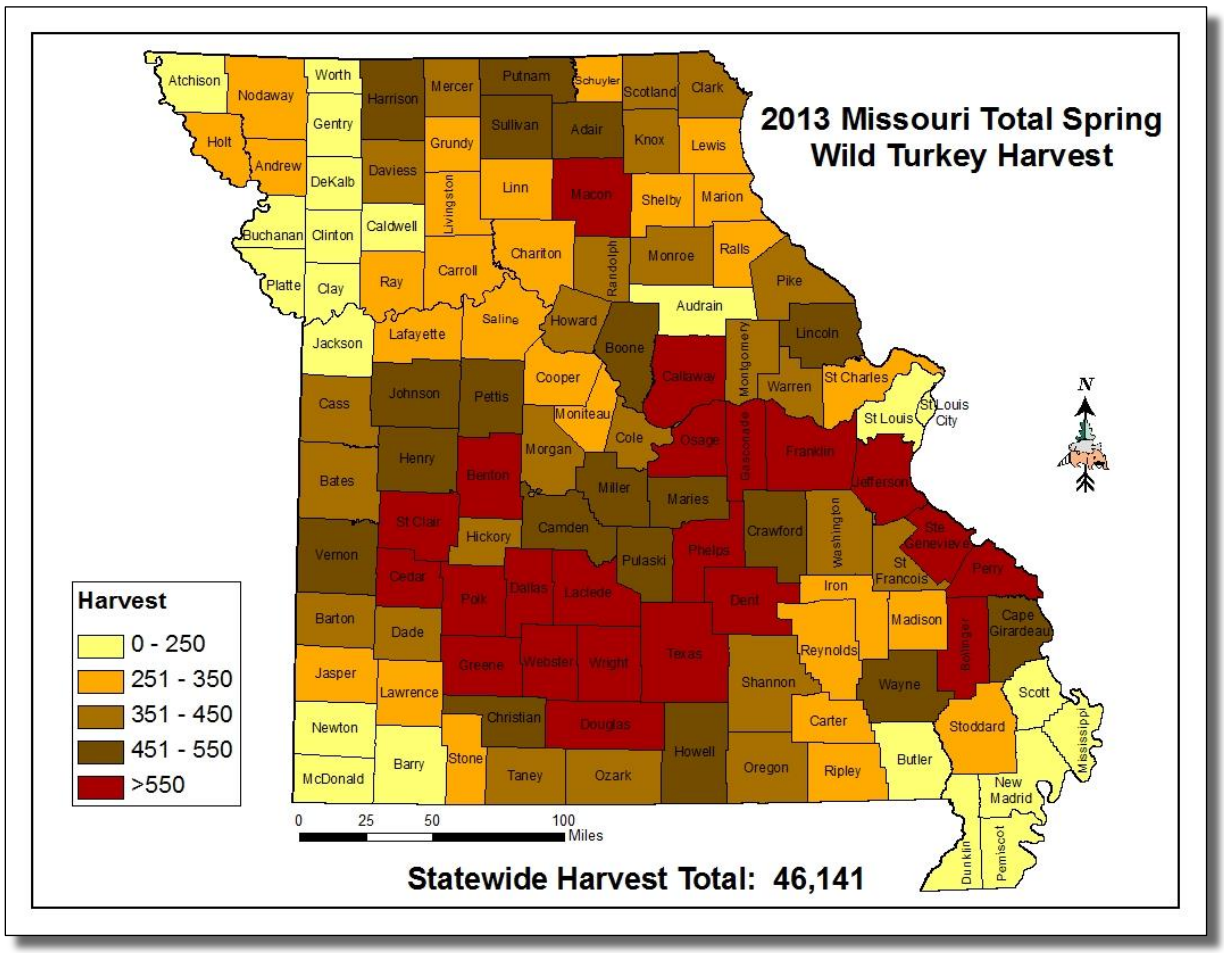

Figure 4. Total spring wild turkey harvest in Missouri, 2013.

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 2013 spring turkey season (115,020; excluding no-cost landowner permits) increased by 13% from the 2012 spring permit sales total. Spring turkey permit sales during 2013 remain 12% below the permit sales record set in 2003 (Figure 5, Table 4). Spring turkey permit sales in 2013 included 107,932 (94%) resident permits and 7,088 (6%) nonresident permits. An additional 45,623 no-cost permits were distributed to resident landowners. The total number of spring turkey hunters in Missouri in 2013 was 155,489. 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.

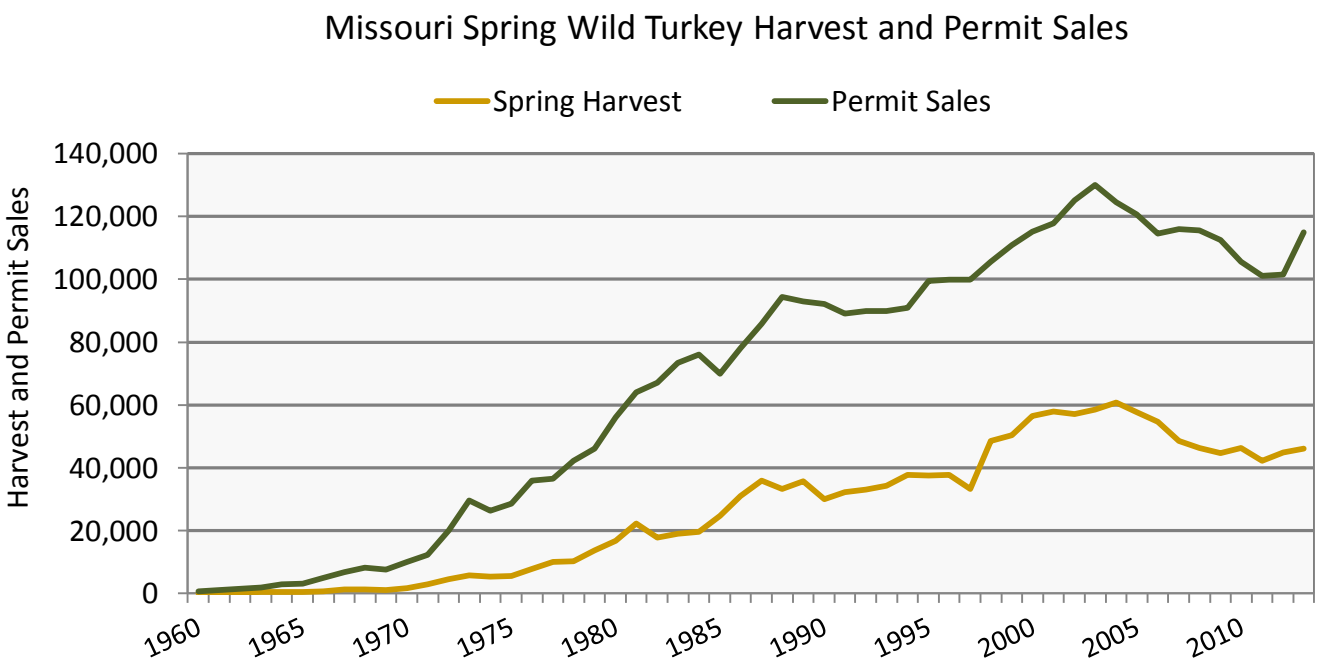

Figure 5. Number of wild turkeys harvested during the spring season (youth and regular seasons) in Missouri, and the number of turkey hunting permits sold for the spring season, 1960-2013. Permit sales do not include no-cost landowner permits.

Spring turkey harvest in Missouri during 2013 was 24% below the record harvest of over 60,000 birds in 2004. 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 spring season was 77 wild turkeys harvested per 1,000 hunting trips. The previous 5 and 10-year average success rates for permit-buyers were 70 and 76 wild turkeys harvested per 1,000 hunting trips, respectively.

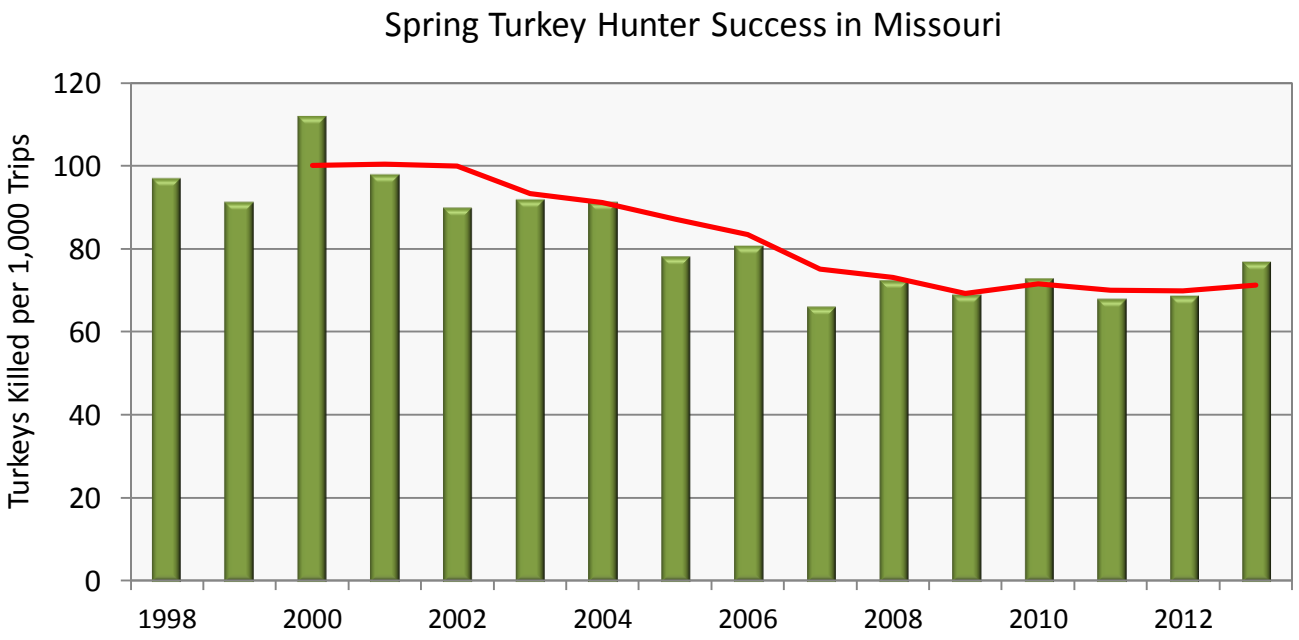

Figure 6. Statewide spring turkey hunter success in Missouri. Data are the number of turkeys harvested per 1,000 hunting trips, 1998-2013. Trendline (red) displays moving 3-year average.

2013 Fall Firearms Turkey Season

The 2013 fall firearms turkey harvest total of 5,931 represents 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. 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, Table 5).

Although the novelty of the fall firearms turkey season may have worn off for some of Missouri's hunters, the increasing popularity of the archery deer and turkey season is likely to be partially responsible for the declining interst. Additionally, poor turkey production during the mid-to-late 2000s and declining turkey numbers is likely to be another factor influencing hunter participation. Missouri is not alone in experiencing a declining trend in fall firearms turkey hunting participation, as even some states with a strong fall turkey hunting tradition have experienced a similar trend.

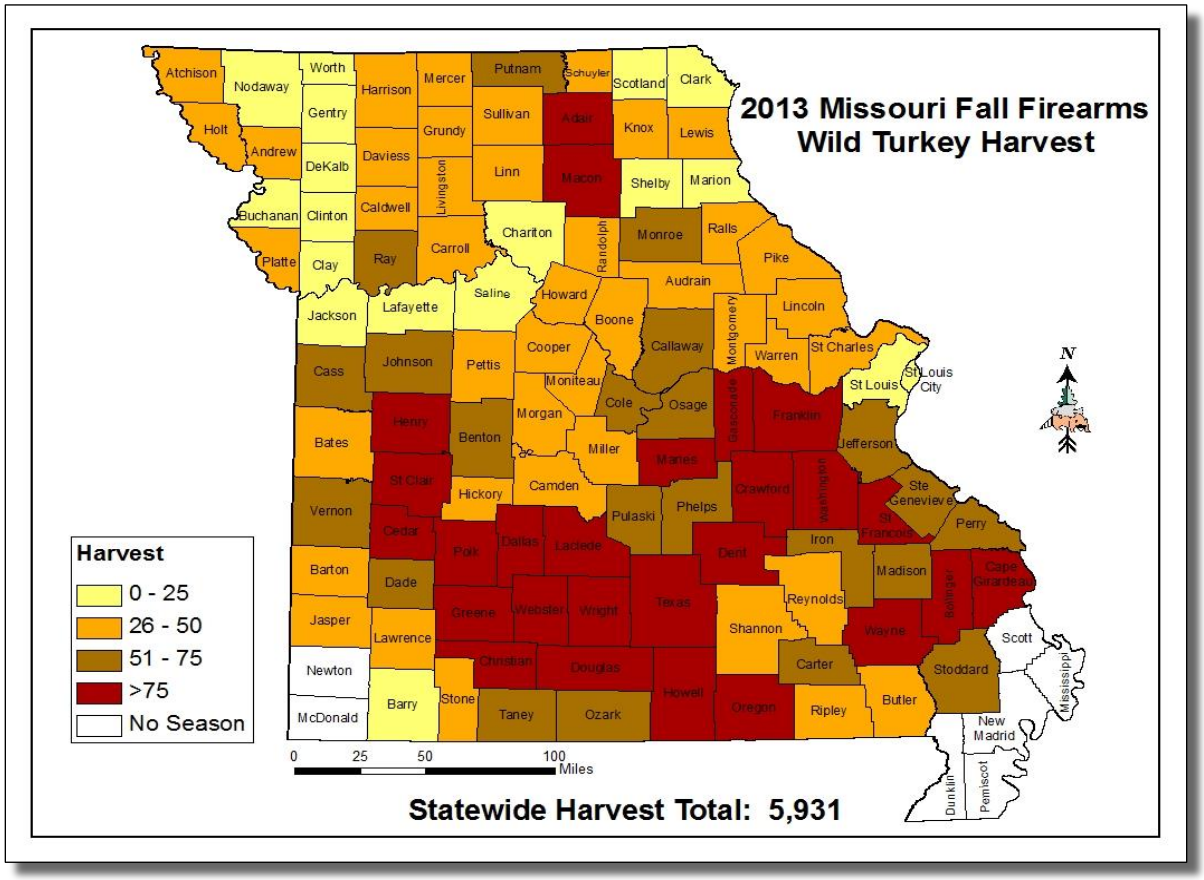

Figure 7. Missouri fall firearms wild turkey harvest, 2013.

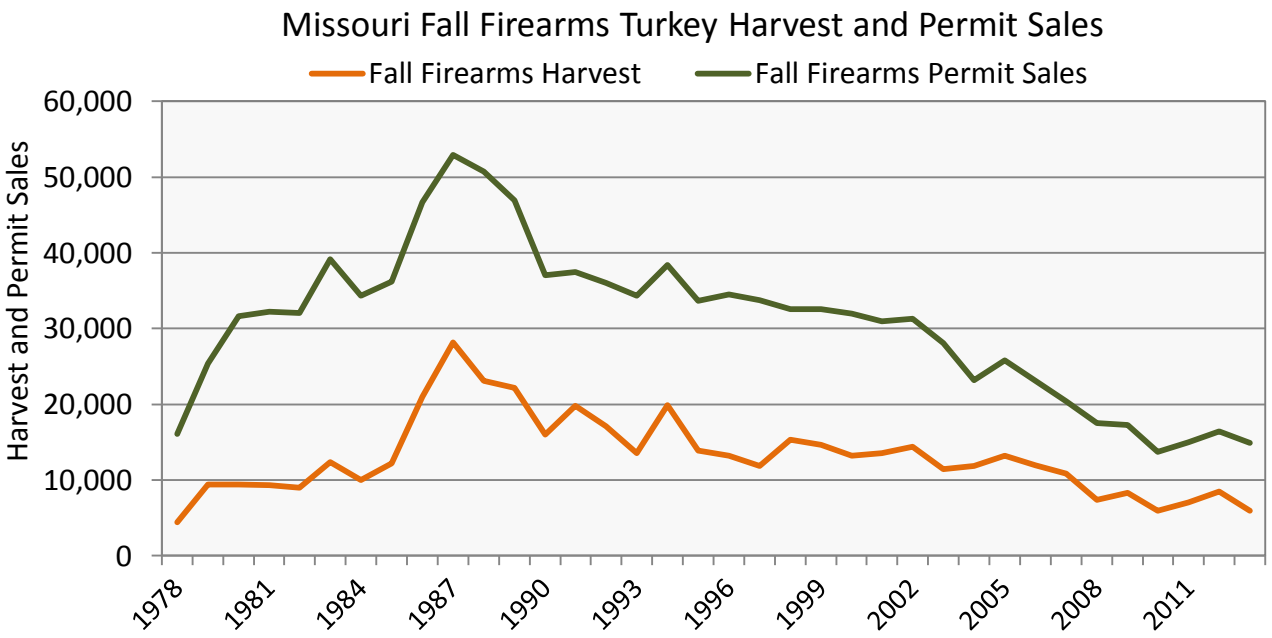

Figure 8. Number of wild turkeys harvested during the fall firearms turkey season in Missouri, and the number of fall firearms permits sold, 1978-2013. Permit sales do not include no-cost landowner permits.

Table 5. Fall firearms turkey harvest and permit sales[a] in Missouri, 1978-2013.

Year	Fall Firearms Harvest	% Change From Previous Year	Fall Permit Sales[a]	% Change From Previous Year
1978[b]	4,389	n/a	16,072	n/a
1979	9,387	+113.9	25,414	+58.1
1980[c]	9,424	+0.4	31,606	+24.4
1981	9,293	-1.4	32,199	+1.9
1982	8,989	-3.3	32,051	-0.5
1983	12,394	+37.9	39,160	+22.2
1984	10,034	-19.0	34,375	-12.2
1985	12,179	+21.4	36,218	+5.4
1986[d]	21,019	+72.6	46,688	+28.9
1987	28,139	+33.9	52,922	+13.4
1988	23,080	-18.0	50,715	-4.2
1989	22,131	-4.1	46,946	-7.4
1990	16,015	-27.6	37,080	-21.0
1991	19,788	+23.6	37,469	+1.0
1992	17,061	-13.8	36,033	-3.8
1993	13,569	-20.4	34,379	-4.6
1994	19,869	+46.4	38,424	+11.8
1995	13,866	-30.2	33,642	-12.6
1996	13,207	-4.8	34,522	+2.6
1997	11,866	-10.2	33,765	-2.2
1998	15,343	+29.3	32,593	-3.5
1999	14,651	-4.5	32,606	0.0
2000	13,230	-9.7	31,968	-2.0
2001	13,596	+2.8	30,949	-3.2
2002	14,392	+5.9	31,329	+1.2
2003	11,436	-20.5	28,108	-10.3

[a] Does not include no-cost landowner permits
[b] 12-day season with 1-bird bag limit
[c] Season length increased to 14 days
[d] Bag limit increased to 2 turkeys

Table 5. Continued

Year	Fall Firearms Harvest	% Change From Previous Year	Fall Permit Sales[a]	% Change From Previous Year
2004	11,824	+3.4	23,215	-17.4
2005[e]	13,233	+11.9	25,805	+11.2
2006	11,927	-9.9	23,141	-10.3
2007	10,859	-9.0	20,397	-11.9
2008	7,389	-32.0	17,533	-14.0
2009	8,351	+13.0	17,287	-1.4
2010	5,928	-29.0	13,736	-20.5
2011	7,077	+19.4	15,020	+9.3
2012	8,498	+20.1	16,413	+9.3
2013	5,931	-30.2	14,898	-9.2

[e] Season length increased to 31 days

2013 Fall Archery Turkey Season

Hunters harvested 2,546 turkeys during the 2013 fall archery turkey season (Figure 9, 10). The 2013 archery turkey harvest total represents a 21% decrease from the 2012 season, 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 (Figure 8), the fall archery harvest continued to increase until the mid-2000s. Since 2005, archery turkey harvests have fluctuated substantially on an annual basis (Figure 10, Table 6).

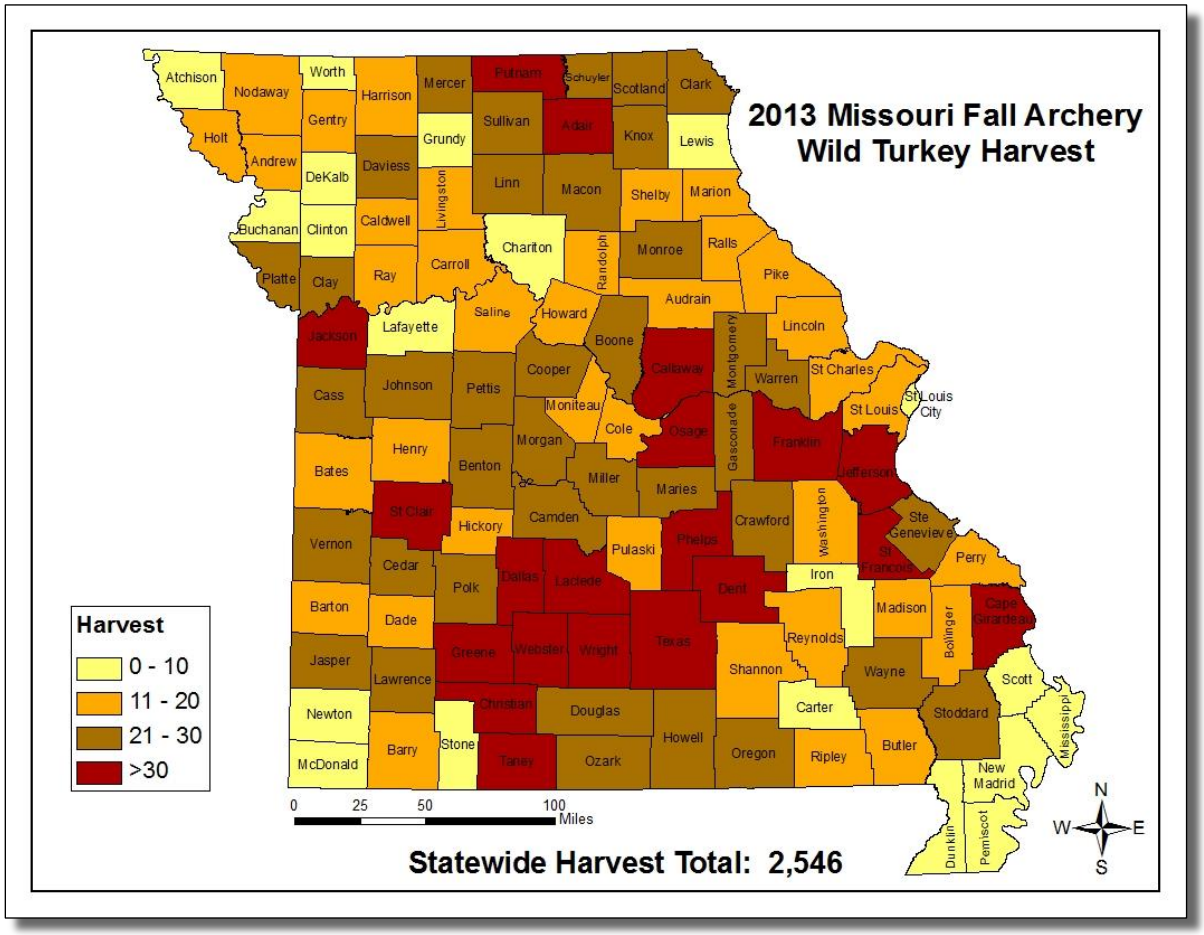

Figure 9. Missouri fall archery wild turkey harvest during the 2013 season.

Although archery permit sales were relatively stable from the mid-1990s through the mid-2000s, sales have since shown an increasing trend (Figure 11, Table 6). In 2013, 115,157 permits were sold; the second highest number 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 200,524.

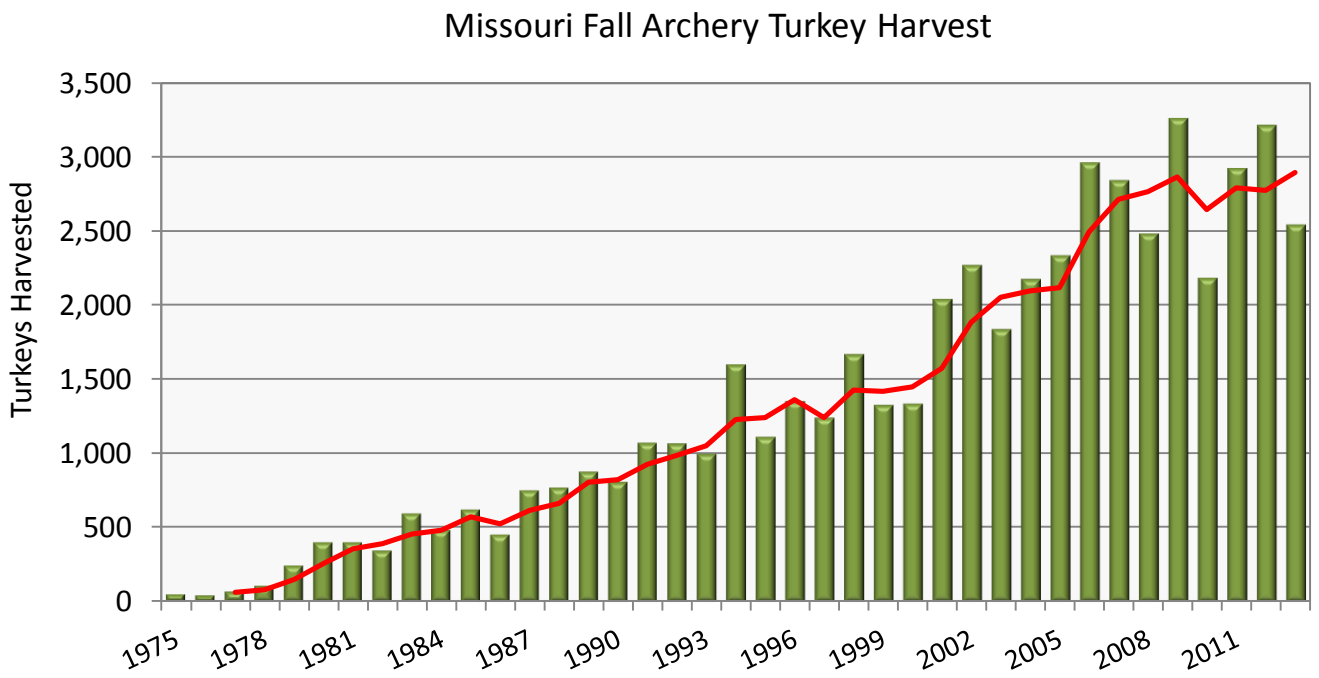

Figure 10. Missouri fall archery wild turkey harvest, 1975-2013. Trendline (red) displays 3-year moving average.

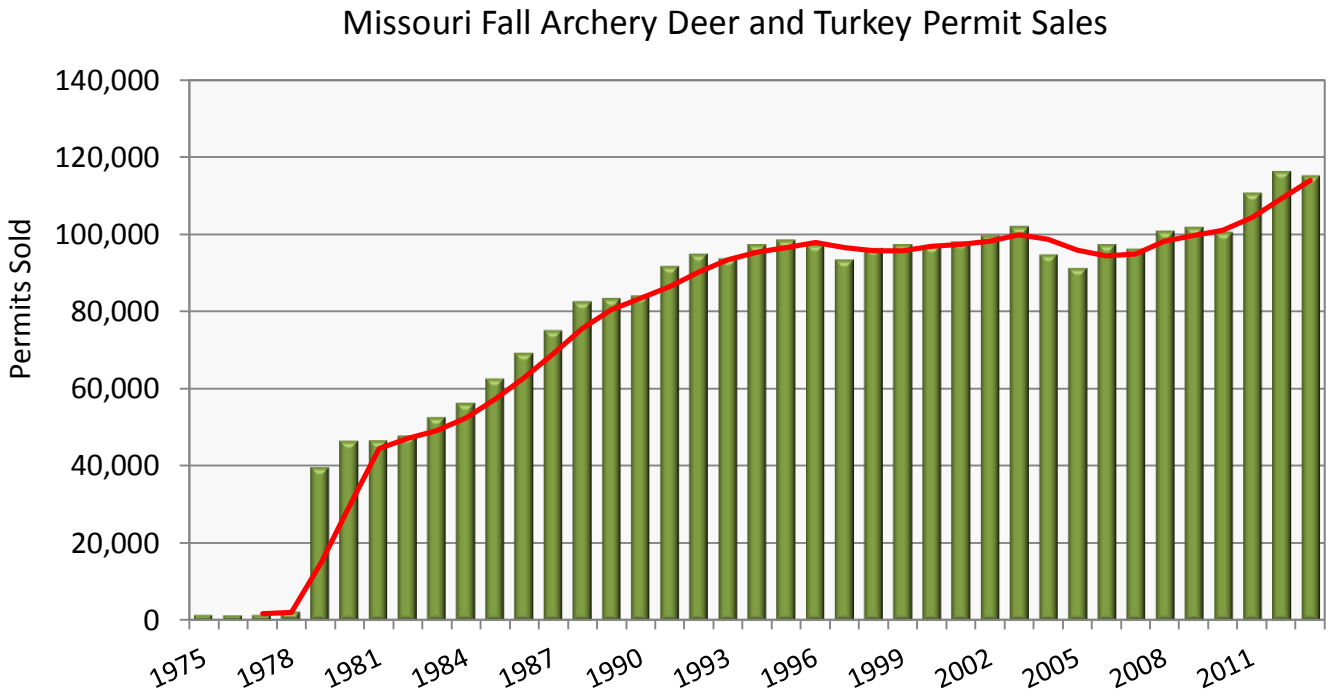

Figure 11. Missouri archery deer and turkey permit sales, 1975-2013. Permit sales do not include no-cost landowner permits. Prior to 1979, hunters purchased archery deer and turkey permits separately. Trendline (red) displays 3-year moving average.

Table 6. Fall archery turkey harvest and permit sales[a] in Missouri, 1975-2013.

Year	Fall Archery Harvest	% Change From Previous Year	Fall Archery Permit Sales[a]	% Change From Previous Year
1975	54	n/a	1,568	n/a
1976	46	-14.8	1,469	-6.3
1977	72	+56.5	1,701	+15.8
1978	108	+50.0	2,478	+45.7
1979[b]	248	+129.6	39,830	+1,507.3
1980	406	+63.7	46,548	+16.9
1981	405	-0.2	46,776	+0.5
1982	349	-13.8	47,931	+2.5
1983	598	+71.3	52,666	+9.9
1984	488	-18.4	56,378	+7.0
1985	624	+27.9	62,731	+11.3
1986	454	-27.2	69,265	+10.4
1987	753	+65.9	75,064	+8.4
1988[c]	770	+2.3	82,612	+10.1
1989	878	+14.0	83,440	+1.0
1990	812	-7.5	84,018	+0.7
1991	1,073	+32.1	91,656	+9.1
1992	1,071	-0.2	94,835	+3.5
1993	999	-6.7	93,729	-1.2
1994	1,604	+60.6	97,441	+4.0
1995[d]	1,113	-30.6	98,601	+1.2
1996	1,357	+21.9	97,417	-1.2
1997	1,241	-8.5	93,402	-4.1
1998	1,670	+34.6	96,374	+3.2
1999	1,331	-20.3	97,345	+1.0
2000	1,340	+0.7	96,980	-0.4

[a] Does not include no-cost landowner permits
[b] Archery deer and archery turkey permits combined
[c] Bag limit increased from 1 to 2 turkeys
[d] Season expansion: October 1 – January 15

Table 6. Continued.

Year	Fall Archery Harvest	% Change From Previous Year	Fall Archery Permit Sales[a]	% Change From Previous Year
2001	2,043	+52.5	97,966	+1.0
2002	2,272	+11.2	99,630	+1.7
2003[e]	1,840	-19.0	102,012	+2.4
2004	2,333	+26.8	94,693	-7.2
2005	2,949	+26.4	91,152	-3.7
2006	2,823	-4.3	97,302	+6.7
2007	2,513	-11.0	96,204	-1.1
2008	2,484	-1.2	100,860	+4.8
2009	3,263	+31.4	101,930	+1.1
2010	2,184	-33.1	100,491	-1.4
2011	2,923	+33.8	110,647	+10.1
2012	3,217	+10.1	116,209	+5.0
2013	2,546	-20.9	115,157	-0.9

[e] Season expansion: September 15 – January 15

HUNTING INCIDENTS

There was 1 non-fatal hunting incident that occurred during the 2013 spring turkey season.

RECENT REGULATION CHANGES

Beginning with the 2013 spring turkey season, turkey hunters were no longer required to affix “Be Safe” stickers to their firearms.

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 that they bowhunt, an index of wild turkey abundance can be calculated as the number of turkeys observed per 1,000 hours.

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 7). 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 7).

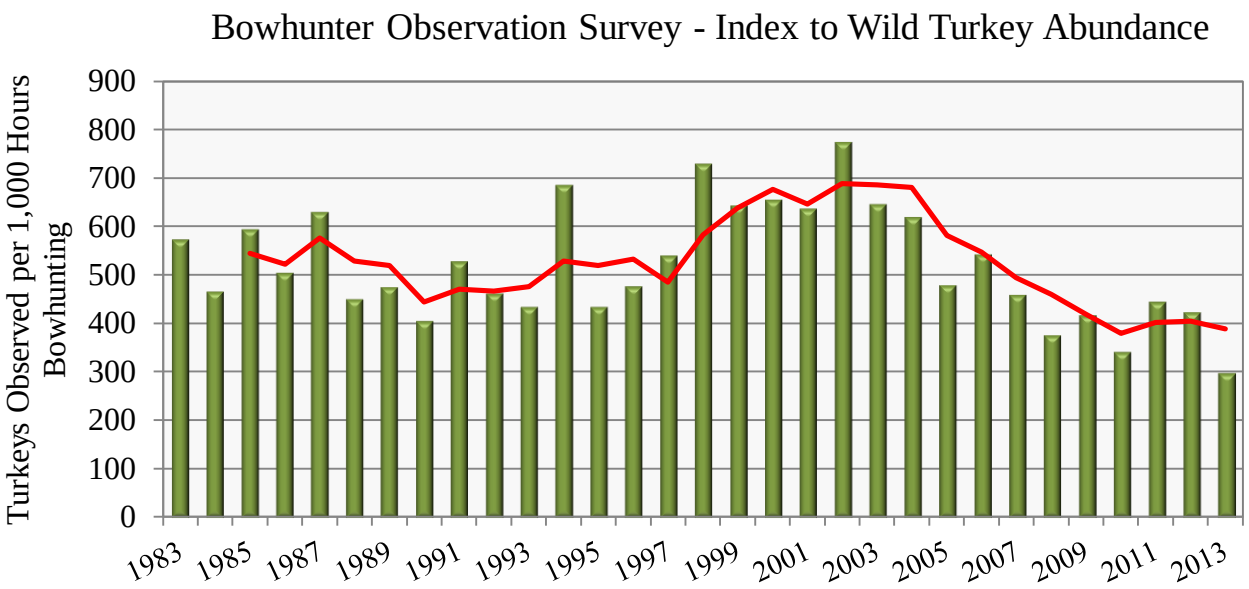

Figure 12. Statewide observations of wild turkeys by bowhunters in Missouri, 1983-2013. Data are the average number of turkeys observed per 1,000 hours bowhunting. Trendline (red) displays 3-year moving average.

Table 7. 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%**

WILD TURKEY RESEARCH PROJECT UPDATE

Beginning last December, the MDC began the first year of a 5-year wild turkey research project in north Missouri in partnership with the University of Missouri, University of Washington, and the National Wild Turkey Federation (NWTF). The study is being conducted in Putnam, Schuyler, Monroe, and Marion Counties. Funding for the research project comes from the MDC and grants from the Wildlife Restoration Program and the George Clark Missouri State Chapter of the NWTF.

The research project will provide information that will be used by the MDC's Wild Turkey Management Program to assist in making decisions about turkey hunting regulations. MDC uses a science-based approach to manage the state's wild turkey population, and this research project is just one of the many ways that the Conservation Department obtains the information used in its program.

The ultimate goal of the project is to develop new population models, which will provide annual estimates of wild turkey population size, survival, harvest rates, recruitment, and population growth rate. A computer software program will also be created to facilitate use of the population models. In addition to developing population models and a computer software program, researchers will be capturing and radio-tracking wild turkeys to obtain information about wild turkey demographics. These demographic data will be used in population model development. The research project will provide the MDC with estimates of seasonal and annual survival for gobblers, hens, and jakes, as well as harvest rate estimates during the spring and fall turkey hunting seasons.

Field work for the project began in December 2013. The primary goal of the winter's research efforts was to capture wild turkeys using rocket-nets so that researchers could fit birds with bands and radio-transmitters. From December through March, researchers captured over 260 wild turkeys in the four study area counties. After processing, all turkeys were released in the same fields in which they were captured. This year's capture total included over 140 jakes and gobblers and about 120 hens.

Fitting wild turkeys with radio-transmitters will enable researchers to track the birds and determine survival throughout the year, in addition to identifying the various sources of mortality. Of central importance will be determining what proportion of gobblers and jakes are harvested during the spring turkey hunting season. To accomplish this, a toll-free phone number is listed on each turkey band. Should a hunter happen to shoot a banded bird, in addition to reporting their bird through the Telecheck system, they will also call the toll-free number on the band to report their harvest. The information gained from band returns is critically important to the success of the project.

In addition to determining the proportion of gobblers and jakes that are harvested during the spring hunting season, researchers will be monitoring hens closely during the nesting and brood-rearing seasons. The study will allow researchers to answer some basic questions about wild turkey reproduction, including: What proportion of hens attempt to nest each year? Does this differ between adult and juvenile hens? What proportion of hens nest successfully? In what habitat types are hens nesting? Of those hens that nest successfully, how many poults survive? Although previous

research projects have shed light on the answers to these questions, brood survey results indicate considerable declines in wild turkey production since the last turkey research project was conducted in Missouri, and having updated information will be important. Wild turkeys will also be radio-tracked intensively during fall to determine what proportion of birds are harvested during the fall firearms and fall archery turkey seasons.

Central to the success of the project's first field season has been the cooperation from private landowners in the counties in which the research is being conducted. Research crews have received access to numerous properties throughout the four county area, and the support from local landowners has been greatly appreciated. Also central to the success has been a reliance on partnerships.

Trapping efforts for the project have concluded for the year and researchers have been conducting intensive radio-tracking. Researchers will continue to radio-track turkeys throughout the spring, summer, and fall, until the next turkey trapping season begins in December. Any landowners in Putnam, Schuyler, Monroe, and Marion Counties that would be interested in having wild turkey research conducted on their property should contact the Conservation Department for additional information.

MDC Private Land Conservationist, Craig Williamson, holds a banded wild turkey captured as part of a wild turkey research project being conducted in north Missouri.

Appendix A. 2013 Missouri spring turkey harvest (youth and regular seasons combined).

County	Adult Males	Juvenile Males	Bearded Hens	Total
Adair	463	51	6	520
Andrew	239	39	6	284
Atchison	161	27	2	190
Audrain	212	29	2	243
Barry	105	73	0	178
Barton	302	60	7	369
Bates	313	73	3	389
Benton	565	95	7	667
Bollinger	529	161	11	701
Boone	478	46	6	530
Buchanan	114	21	3	138
Butler	100	54	1	155
Caldwell	187	46	3	236
Callaway	681	94	11	786
Camden	396	78	9	483
Cape Girardeau	359	179	9	547
Carroll	284	59	1	344
Carter	184	72	1	257
Cass	305	100	6	411
Cedar	469	109	11	589
Chariton	286	47	3	336
Christian	310	162	16	488
Clark	346	38	5	389
Clay	166	43	4	213
Clinton	136	25	2	163
Cole	327	68	4	399
Cooper	303	35	3	341
Crawford	448	56	8	512
Dade	289	78	5	372
Dallas	428	121	4	553
Daviess	329	52	9	390
Dekalb	169	43	2	214
Dent	513	86	11	610
Douglas	515	139	13	667
Dunklin	11	7	0	18
Franklin	880	197	25	1,102

Appendix A. Continued.

County	Adult Males	Juvenile Males	Bearded Hens	Total
Gasconade	517	110	9	636
Gentry	211	33	0	244
Greene	537	223	7	767
Grundy	229	35	5	269
Harrison	388	72	5	465
Henry	427	113	7	547
Hickory	300	59	10	369
Holt	278	43	5	326
Howard	372	50	4	426
Howell	392	150	7	549
Iron	246	29	1	276
Jackson	173	49	2	224
Jasper	216	109	8	333
Jefferson	548	93	21	662
Johnson	385	113	7	505
Knox	330	46	7	383
Laclede	499	188	16	703
Lafayette	187	66	1	254
Lawrence	248	89	3	340
Lewis	218	43	4	265
Lincoln	428	72	11	511
Linn	263	54	4	321
Livingston	250	42	1	293
Macon	567	77	8	652
Madison	278	46	3	327
Maries	392	106	12	510
Marion	226	31	3	260
McDonald	22	31	0	53
Mercer	313	54	7	374
Miller	472	72	3	547
Mississippi	18	21	0	39
Moniteau	300	46	3	349
Monroe	372	63	12	447
Montgomery	312	75	5	392
Morgan	359	67	7	433
New Madrid	34	19	1	54

Appendix A. Continued

County	Adult Males	Juvenile Males	Bearded Hens	Total
Newton	50	45	3	98
Nodaway	300	43	6	349
Oregon	269	122	2	393
Osage	516	130	12	658
Ozark	240	125	7	372
Pemiscot	6	9	0	15
Perry	427	120	5	552
Pettis	397	69	6	472
Phelps	517	78	10	605
Pike	370	57	6	433
Platte	190	35	1	226
Polk	460	128	4	592
Pulaski	360	86	5	451
Putnam	433	39	9	481
Ralls	283	34	0	317
Randolph	395	41	5	441
Ray	221	61	4	286
Reynolds	286	42	2	330
Ripley	194	118	2	314
Saint Charles	272	66	5	343
Saint Clair	599	131	20	750
Saint Francois	357	50	10	417
Saint Louis	113	34	3	150
Sainte Genevieve	622	108	14	744
Saline	198	52	4	254
Schuyler	231	17	7	255
Scotland	385	36	7	428
Scott	103	42	0	145
Shannon	344	86	2	432
Shelby	216	37	3	256
Stoddard	187	111	6	304
Stone	192	118	4	314
Sullivan	460	54	8	522
Taney	240	121	7	368
Texas	740	173	24	937
Vernon	428	112	10	550

Appendix A. Continued

County	Adult Males	Juvenile Males	Bearded Hens	Total
Warren	326	67	11	404
Washington	374	64	3	441
Wayne	330	126	7	463
Webster	458	171	16	645
Worth	127	18	2	147
Wright	428	161	9	598
Totals	**36,853**	**8,589**	**699**	**46,141**

Appendix B. 2013 Missouri fall turkey harvest (firearms and archery seasons combined).

County	Adult Males	Adult Females	Juvenile Males	Juvenile Females	Total
Adair	33	26	11	43	113
Andrew	12	17	4	11	44
Atchison	4	10	3	13	30
Audrain	15	10	2	17	44
Barry	6	7	4	6	23
Barton	15	18	4	8	45
Bates	12	18	7	20	57
Benton	23	38	11	22	94
Bollinger	25	22	15	53	115
Boone	15	21	8	10	54
Buchanan	5	5	1	4	15
Butler	9	10	10	16	45
Caldwell	10	7	6	17	40
Callaway	29	41	9	46	125
Camden	15	28	5	29	77
Cape Girardeau	28	35	16	50	129
Carroll	14	11	9	17	51
Carter	13	16	11	24	64
Cass	16	28	10	32	86
Cedar	39	37	20	36	132
Chariton	6	10	5	13	34
Christian	40	33	13	34	120
Clark	10	9	5	15	39
Clay	10	13	7	8	38
Clinton	5	10	1	15	31
Cole	16	24	18	27	85
Cooper	16	19	6	12	53
Crawford	31	20	18	35	104
Dade	20	18	13	27	78
Dallas	35	25	31	55	146
Daviess	21	24	7	21	73
Dekalb	8	7	1	15	31
Dent	26	31	21	49	127
Douglas	24	25	18	41	108
Dunklin	0	1	0	0	1

Appendix B. Continued.

County	Adult Males	Adult Females	Juvenile Males	Juvenile Females	Total
Franklin	33	42	33	80	188
Gasconade	25	33	14	37	109
Gentry	6	12	3	14	35
Greene	60	94	42	86	282
Grundy	12	10	5	13	40
Harrison	15	26	7	20	68
Henry	49	16	24	35	124
Hickory	17	18	9	11	55
Holt	17	9	9	17	52
Howard	10	18	6	17	51
Howell	29	27	13	35	104
Iron	17	13	14	31	75
Jackson	15	30	2	12	59
Jasper	20	27	14	16	77
Jefferson	28	36	9	38	111
Johnson	24	29	13	30	96
Knox	9	17	5	20	51
Laclede	67	50	25	69	211
Lafayette	11	8	9	5	33
Lawrence	22	22	10	12	66
Lewis	14	9	2	15	40
Lincoln	10	19	9	21	59
Linn	14	18	4	25	61
Livingston	7	13	7	17	44
Macon	26	35	9	35	105
Madison	10	17	15	34	76
Maries	19	20	14	47	100
Marion	9	8	2	8	27
McDonald	0	1	1	0	2
Mercer	12	17	7	19	55
Miller	17	23	5	22	67
Mississippi	2	3	1	1	7
Moniteau	23	11	4	8	46
Monroe	28	25	15	30	98
Montgomery	16	16	15	27	74

Appendix B. Continued.

County	Adult Males	Adult Females	Juvenile Males	Juvenile Females	Total
Morgan	20	17	5	17	59
New Madrid	2	3	1	0	6
Newton	0	4	0	1	5
Nodaway	8	16	3	8	35
Oregon	21	25	13	46	105
Osage	23	28	11	29	91
Ozark	19	27	13	19	78
Pemiscot	3	1	1	2	7
Perry	17	20	9	42	88
Pettis	24	13	11	31	79
Phelps	14	24	17	36	91
Pike	11	19	8	15	53
Platte	15	17	5	13	50
Polk	30	32	17	51	130
Pulaski	16	33	14	27	90
Putnam	30	30	14	34	108
Ralls	18	15	5	15	53
Randolph	7	20	6	18	51
Ray	22	21	8	16	67
Reynolds	7	11	18	28	64
Ripley	20	14	8	16	58
Saint Charles	14	13	3	15	45
Saint Clair	46	36	28	54	164
Saint Francois	20	31	20	54	125
Saint Louis	12	5	5	8	30
Sainte Genevieve	20	36	10	32	98
Saline	4	11	4	7	26
Schuyler	6	15	7	22	50
Scotland	10	16	4	21	51
Scott	2	2	2	3	9
Shannon	22	9	10	15	56
Shelby	7	9	2	18	36
Stoddard	21	26	15	30	92
Stone	5	9	6	19	39
Sullivan	16	21	9	26	72

Appendix B. Continued.

County	Adult Males	Adult Females	Juvenile Males	Juvenile Females	Total
Taney	26	32	16	28	102
Texas	52	47	22	46	167
Vernon	30	28	10	28	96
Warren	15	23	4	22	64
Washington	20	18	13	45	96
Wayne	18	29	26	63	136
Webster	48	42	38	69	197
Worth	2	1	2	5	10
Wright	36	47	23	43	149
Totals	**2,078**	**2,342**	**1,172**	**2,885**	**8,477**

Missouri Department of Conservation