

**PENNSYLVANIA GAME COMMISSION  
BUREAU OF WILDLIFE MANAGEMENT  
ANNUAL PROJECT REPORT**

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**TITLE:** Game Take, Furtaker, Mentored Youth Hunter, Spring Turkey Hunter, Mentored Youth Spring Turkey Hunter Surveys

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**COOPERATING AGENCIES:** Bureau of Automated Technology Services, Bureau of Administrative Services

**WORK LOCATION(S):** Harrisburg, Pennsylvania

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**ABSTRACT:** For the Game Take Survey, we conducted a mixed-mode (Internet and mail) survey, mailing survey invitations and questionnaires to a random sample of 2012-13 general hunting license purchasers ( $n = 18,001$ ) stratified by license type to estimate numbers of hunters, harvests, and hunter-days for game species during the 2012-13 hunting seasons. After 4 mailings, 59.9% of recipients responded. Overall, between the 2011-12 and 2012-13 hunting seasons, harvests increased for grouse, pheasant, snowshoe hare, woodchuck, crow, and porcupine; harvests decreased for spring turkey, fall turkey, rabbit, squirrel, and quail. Five-year trends indicate declines in harvest for fall turkey, rabbit, and grouse, and declines in hunter participation for spring turkey, rabbit, and grouse. We conducted an inaugural Mentored Youth Hunter Survey to estimate participation, effort and harvest. Using a mixed-mode survey concurrent with the Game Take Survey, we received responses from 54.3% of the 2,500 recipients. Squirrel was the most popular small game species hunted by mentored youth, with 38.6% participating. We used a mixed-mode approach to conduct the Furtaker Survey, inviting 7,000 furtaker, junior combination, and senior combination license holders to complete a survey; 47.0% responded. Between the 2011-12 and 2012-13 seasons, the number of hunters and trappers increased for raccoon, red and gray fox, and coyote; and decreased for all other species; harvests increased for raccoon, coyote, muskrat, mink, and opossum. Five-year trends for harvests of furbearers indicate harvests have increased for coyote, and no significant trends for other species. We received 80.9% response to the 2013 Spring Turkey Hunter Survey, which was mailed to 9,876 respondents to the Game Take Survey. We conducted an inaugural Mentored Youth Spring Turkey Hunter Survey, which was mailed to 1,168 respondents to the Mentored Youth Survey.

Over 32% of surveyed mentored youth participated in the 2013 spring turkey hunting season.

## **OBJECTIVES**

1. To annually estimate the numbers of animals harvested, participants, and days spent hunting (hunter-days) for game species.
2. To annually estimate the numbers of furbearers harvested, trapping effort, and trappers and hunters during the furbearer seasons.
3. To monitor long-term trends in harvests, numbers of hunters and trappers, hunter and trapper effort, and harvest per 100 hunter- and trapper-days.

## **METHODS**

The Game Take Survey has been formally conducted by the Pennsylvania Game Commission since the 1971-72 hunting season, and has experienced many changes over the years (Boyd and Weaver 2011). We made several changes to this year's Game Take Survey instrument, including adding bear seasons to reflect 2012-13 season structure, adding pheasant cock and hen harvest, changing ruffed grouse fall and late season separation date to 25 December, and adding woodcock.

We conducted an inaugural Mentored Youth Hunter Survey to estimate participation, effort, and harvest by Pennsylvania's nearly 35,000 Mentored Youth Hunter Program permit holders. The survey instrument was a reduced version of the Game Take Survey instrument, including only seasons in which mentored youth are allowed to participate. The survey was conducted concurrently with the Game Take Survey.

The Furtaker Survey has been conducted since the 1990-91 season. Changes to this year's Furtaker Survey instrument included adding total land and water traps set to estimate total statewide and Wildlife Management Unit scale trapping effort.

We used Pennsylvania Automated Licensing System data to pre-stratify Game Take and Furtaker survey sample frames based on license type, e.g. junior, adult, senior, and nonresident, and whether they purchased additional permits or stamps. We used optimal allocation methods to estimate number of recipients of each license type (Johnson et al. 2012). For the Furtaker Survey, we included 1,000 senior combination license holders in the sample frame to estimate participation. The Mentored Youth Hunter Survey sample was a random selection of mentored youth permit holders.

The Spring Turkey Hunter Survey began in 2012. Our sample frame consisted of all 2012-13 Game Take Survey respondents. Survey instrument and protocols were similar to the previous year.

We conducted an inaugural Mentored Youth Spring Turkey Hunter Survey to estimate participation, effort, and harvest by mentored youth in the 2013 spring turkey season. The

sample frame consisted of all respondents of the Mentored Youth Hunter Survey. The survey was conducted concurrently with the Spring Turkey Hunter Survey.

### **Survey Implementation**

New this year, we conducted 4 mailings (an initial invitation for Internet response and 3 follow-up mailings for mail response to nonrespondents) of the Game Take and Mentored Youth Hunter surveys and 3 mailings (an initial mailing for Internet response and 2 follow-up mailings to nonrespondents) of the Furtaker Survey. Initial mailing of the Game Take and Mentored Youth Hunter surveys was 22 February, and the initial mailing of the Furtaker Survey was 29 March. For all surveys, we mailed a reminder postcard to all recipients 1 week after the initial mailing. Second mailings were conducted 3 weeks after the initial mailings. Third and fourth mailings were conducted 4 weeks after the previous mailings. Data entry closed on 31 May for Game Take and Mentored Youth Hunter surveys, and on 7 June for the Furtaker Survey. We mailed 18,001 Game Take questionnaires, 2,500 Mentored Youth Hunter questionnaires, and 7,000 Furtaker questionnaires.

For the Spring Turkey Hunter and Mentored Youth Spring Turkey Hunter surveys, we conducted 3 mailings beginning 31 May. For both surveys, we mailed an initial invitation for Internet response and 2 follow-up mailings for mail response to nonrespondents. We sent a reminder postcard to all recipients 1 week after the initial mailing. The second and third mailings were sent 4 weeks after previous mailings. We mailed 9,876 questionnaires for the Spring Turkey Hunter Survey and 1,168 questionnaires for the Mentored Youth Spring Turkey Hunter Survey. Data entry closed on 16 August.

### **Data Analysis**

For each species except deer and bear, we estimated total harvest, number of participants, hunter-days, and harvest per 100 hunter-days based on 906,202 general hunting licenses sold for the Game Take Survey and Spring Turkey Hunter Survey, 34,984 permits sold for the Mentored Youth Hunter Survey, and 39,913 furtaker licenses and 105,562 junior and senior combination licenses sold for the Furtaker Survey. Deer and bear harvests are measured through other official reporting methods and are not reported here. We calculated percent change in harvest, participation, effort and harvest per unit of effort between 2011 and 2012. Because analyzing trend data that includes information from the 1980s will likely result in negative trends for many species for the foreseeable future, we analyzed data from the past 5 years (2008–2012) using Spearman rho correlation coefficients ( $P$  values  $\leq 0.05$  were considered significant).

## **RESULTS**

For the Game Take, Mentored Youth Hunter, and Furtaker surveys, we received responses from 10,452 (3,459 Internet, 6,993 mail), 1,321 (479 Internet, 842 mail), and 3,223 (1,384 Internet, 1,839 mail) survey recipients, respectively. The response rates, after adjusting for undeliverable questionnaires, were 59.9% (33.1% Internet, 66.9% mail) for the Game Take Survey, 54.3% (36.3% Internet, 63.7% mail) for the Mentored Youth Hunter Survey, and 47.0% (42.9% Internet, 57.1% mail) for the Furtaker Survey. The Game Take Survey response rate was 0.6 percentage points lower than in 2011-12. The Furtaker Survey response rate was 12.3 percentage points lower than the 2011-12 survey. Decline in Furtaker Survey response rate (16–

20% across all license types) likely was due to an error in mailing the 2011-12 Furtaker Survey instrument in the first paper mailing. All recipients of the first paper mailing (including those that had already responded) were sent a correct 2012-13 Furtaker Survey instrument with letter of explanation. Of the 108 junior combination license holders that responded to the Furtaker Survey, 20 (18.5%) indicated hunting or trapping for furbearers. Of the 692 senior combination license holders that responded to the Furtaker Survey, 74 (10.7%) indicated hunting or trapping for furbearers.

For the Spring Turkey Hunter and Mentored Youth Spring Turkey Hunter surveys, 7,912 (2,873 Internet, 5,039 mail) and 816 (334 Internet, 482 mail) responses were processed, respectively. Overall response rates after adjusting for undeliverable questionnaires were 80.9% (36.3% Internet, 63.7% mail) for the Spring Turkey Hunter Survey and 70.4% (40.9% Internet, 59.1% mail) for the Mentored Youth Spring Turkey Hunter Survey. Overall response rate for the Spring Turkey Hunter Survey increased 4.1 percentage points over last year's survey.

### **Annual Changes**

Compared to the 2011-12 season, harvests for 6 of 11 seasons or species of game, in 2012-13 increased, including grouse, pheasant, snowshoe hare, woodchuck, crow, and porcupine, and decreased for spring turkey, fall turkey, rabbit, squirrel, and quail (Table 1). The number of hunters decreased for 9 of 11 seasons or species, and increased for woodchuck and crow (Table 2). Number of hunter-days increased for 5 of 11 seasons or species, including spring turkey, pheasant, woodchuck, crow, and porcupine, and decreased for fall turkey, rabbit, grouse, squirrel, quail, and snowshoe hare (Table 3). Harvest per 100 hunter-days (a standardized measure of hunter success) increased for 6 of 11 seasons or species, including fall turkey, grouse, pheasant, snowshoe hare, crow, and porcupine, and decreased for spring turkey, rabbit, squirrel, quail, and woodchuck (Table 4).

The numbers of hunters and trappers of furbearers increased for 4 of 10 species, including raccoon, red fox, gray fox, and coyote, and decreased for muskrat, mink, beaver, skunk, weasel, and opossum (Table 5). Furbearer harvests increased for 5 of 10 species, including raccoon, coyote, muskrat, mink, and opossum, and decreased for red fox, gray fox, beaver, skunk, and weasel (Table 6). Furbearer trapper and hunter days increased for 7 of 10 species, including raccoon, red fox, gray fox, coyote, muskrat, mink, and opossum, and decreased for beaver, skunk, and weasel (Table 7).

Number of trapnights (number of days  $\times$  average number of traps set) increased for 8 of 10 species, including raccoon, red fox, gray fox, coyote, muskrat, mink, skunk, and opossum, and decreased for beaver and weasel (Table 8). Harvest per 100 hunter and trapper days increased for 4 of 10 species, including raccoon, coyote, weasel, and opossum, and decreased for red fox, gray fox, muskrat, mink, beaver, and skunk (Table 9). Harvest per 100 trapnights decreased for all species except weasel and opossum (Table 10).

### **Long-term Trends**

Over the past 5 years, harvests have significantly declined ( $P < 0.05$ ) for fall turkey, rabbit, and grouse, and remained stable for spring turkey, squirrel, pheasant, quail, snowshoe hare, woodchuck, and crow (Table 1). Numbers of hunters significantly declined for spring

turkey, rabbit, and grouse, and are stable for fall turkey, squirrel, pheasant, quail, snowshoe hare, woodchuck, and crow (Table 2). Hunter-days have significantly declined for fall turkey, rabbit, and grouse, and remained stable for spring turkey, squirrel, pheasant, quail, snowshoe hare, woodchuck, and crow (Table 3). Harvest per 100 hunter days remained stable for all species (Table 4).

Junior license buyers' participation in rabbit and pheasant junior hunts decreased compared to the 2011-2012 season, but increased in squirrel junior hunts (Table 11). Participation in spring turkey junior hunts increased between 2012 and 2013 (Table 11). Five-year trends indicate a significant decrease in participation in rabbit junior hunts, and stable participation in spring turkey, pheasant, and squirrel junior hunts (Table 11). Between 2011 and 2012, estimated harvests during junior hunts increased for pheasant and squirrel, and decreased for rabbit (Table 12). Spring turkey junior hunt harvests decreased between 2012 and 2013 (Table 12). Five-year trends in junior hunt harvests show a significant decrease for rabbit, and remain stable for spring turkey, pheasant, and squirrel (Table 12).

Of 1,321 mentored youth permit holder respondents, 88.9% reported hunting in the 2012-13 license year. Squirrel and spring turkey hunting were popular among mentored youth (Tables 13–15).

Five-year trends in numbers of hunters and trappers show an increase for 3 of 10 furbearer species, including raccoon, red fox, and coyote, and remained stable for gray fox, muskrat, mink, beaver, skunk, weasel, and opossum (Table 5). Harvests of coyote have increased significantly in the past 5 years, and remained stable for the remaining species (Table 6).

## **RECOMMENDATIONS**

1. The Game Take, Mentored Youth Hunter, Furtaker, Spring Turkey Hunter, and Mentored Youth Spring Turkey Hunter surveys are the best source for harvest and participant data for many species; thus, we recommend continuing these surveys.

2. Continue to evaluate cover letters, survey instruments, and methodologies to improve response rates.

## **LITERATURE CITED**

Boyd, R. C., and M. Weaver. 2011. Game Take and Furtaker Surveys. Annual Job Report. Pennsylvania Game Commission, Harrisburg, USA.

Johnson, J. B., Boyd, R. C., and M. Weaver. 2012. Game Take and Furtaker Surveys. Annual Job Report. Pennsylvania Game Commission, Harrisburg, USA.

Table 1. Harvest, by species, 1991-2013, Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant <sup>a</sup>	Quail <sup>a</sup>	Hare	Woodchuck	Crow	Porcupine
1991	16,606	31,979	1,462,270	293,891	1,632,108	269,065	3,005	3,579	1,304,020	257,009	–
1992	18,180	21,468	1,488,850	254,539	1,761,285	261,541	1,236	3,961	1,157,090	185,192	–
1993	24,068	30,477	1,160,939	272,690	1,585,368	250,149	4,837	2,114	1,274,166	191,639	–
1994	28,558	39,094	1,025,319	304,162	1,826,618	236,698	2,902	3,352	1,284,819	247,219	–
1995	36,401	49,748	1,010,938	315,197	1,599,104	250,930	1,204	2,997	1,225,101	295,962	–
1996	33,726	35,787	807,072	218,256	1,442,560	215,502	3,387	1,582	1,149,995	275,541	–
1997	30,956	37,398	827,520	187,770	1,352,038	219,864	1,766	1,432	1,251,145	184,944	–
1998	32,661	33,628	911,003	183,468	1,331,051	216,669	241	2,507	1,204,582	247,047	–
1999	37,806	40,718	715,862	177,355	1,236,108	211,257	3,938	2,412	1,117,970	209,273	–
2000	43,815	44,865	770,841	145,525	1,276,009	233,537	4,373	1,747	1,191,114	219,773	–
2001	49,186	48,008	701,551	159,610	1,276,603	244,282	4,276	4,584	1,187,114	195,273	–
2002	41,147	37,346	602,234	118,577	1,002,309	205,696	1,064	1,369	1,267,265	217,068	–
2003	42,876	31,100	588,310	106,587	1,063,996	234,196	2,059	1,908	1,171,888	207,707	–
2005	32,593	25,171	428,414	58,596	646,033	175,676	2,891	1,522	892,391	188,460	–
2006	37,845 <sup>b</sup>	24,481	409,350	89,145	784,741	141,775	1,228	1,310	910,654	222,382	–
2007	36,294 <sup>b</sup>	25,369	418,139	82,020	674,991	168,094	4,507	685	840,523	182,320	–
2008	40,483 <sup>b</sup>	24,288	463,935	108,693	708,898	110,331	1,097	783	993,207	183,203	–
2009	42,478 <sup>b</sup>	20,934	419,721	75,997	635,193	151,737	3,452	1,525	710,411	268,711	–
2010	31,908 <sup>b</sup>	15,884	341,288	66,385	530,125	103,366	311	1,030	684,927	96,831	–
2011	31,769 <sup>b</sup>	14,300	289,547	52,243	690,141	116,828	2,260	510	821,965	182,659	10,096
2012	35,621 <sup>c</sup>	14,074	254,328	52,289	643,382	198,704	744	690	844,515	289,833	13,596
2013	34,156 <sup>c</sup>	–	–	–	–	–	–	–	–	–	–
% change <sup>d</sup>	-4.1	-1.6	-12.2	0.1	-6.8	70.1	-67.1	35.3	2.7	58.7	34.7
$\rho^e$	-0.200	-1.000	-1.000	-0.900	-0.200	0.500	-0.300	-0.600	-0.100	0.200	–
<i>P</i>	0.747	<0.001	<0.001	0.037	0.747	0.391	0.624	0.285	0.873	0.747	–

<sup>a</sup> Estimates exclude harvest on shooting preserves.

<sup>b</sup> Spring turkey harvest estimate does not include second spring turkey harvests from special turkey license holders.

<sup>c</sup> Spring turkey harvest estimate includes junior, regular, and second spring turkey data.

<sup>d</sup> Percent change from 2011 to 2012 except spring turkey percent change is from 2012 to 2013.

<sup>e</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.

Table 2. Hunters, by species, 1991-2013, Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant <sup>a</sup>	Quail <sup>a</sup>	Hare	Woodchuck	Crow	Porcupine
1991	179,202	252,210	405,004	292,418	348,868	254,051	3,279	7,601	118,257	39,014	–
1992	186,738	212,104	373,800	254,724	329,726	217,189	1,444	6,156	114,515	34,442	–
1993	201,060	222,780	347,129	242,398	311,103	198,657	2,657	5,801	109,576	34,648	–
1994	224,405	244,095	335,715	259,727	326,271	205,384	1,323	7,236	117,251	37,841	–
1995	239,521	261,395	297,570	239,014	293,852	182,224	1,451	5,949	113,127	36,782	–
1996	241,613	250,377	280,351	214,272	279,259	171,275	1,184	5,011	101,576	30,087	–
1997	233,287	249,934	261,115	197,994	267,051	148,900	1,009	3,723	104,561	30,696	–
1998	194,819 <sup>b</sup>	199,696 <sup>b</sup>	242,509	183,511	252,738	158,497	1,116	5,506	92,517	31,390	–
1999	237,984	244,638	221,179	174,576	238,887	142,142	1,550	4,379	90,853	29,131	–
2000	231,860	230,448	229,906	162,073	238,540	149,260	1,870	3,666	99,294	29,371	–
2001	230,115	228,564	213,295	161,186	231,436	146,751	2,029	4,930	99,787	33,343	–
2002	218,931	217,099	195,078	149,106	201,694	123,879	1,342	3,818	91,149	28,470	–
2003	246,820	211,967	181,426	134,115	199,922	130,676	3,518	5,091	92,986	27,591	–
2005	247,304	203,982	149,647	112,210	166,476	105,508	3,222	5,033	71,682	23,380	–
2006	245,024	182,233	145,712	105,282	174,151	96,590	3,322	5,211	80,522	26,880	–
2007	223,808	162,323	135,956	96,429	154,653	90,548	3,112	3,030	75,554	23,228	–
2008	216,551	152,294	137,842	102,139	171,786	86,052	2,396	2,890	80,116	25,706	–
2009	228,903	156,752	139,772	104,228	157,907	91,549	4,412	4,703	69,407	31,519	–
2010	237,037	163,433	125,537	91,003	150,309	71,579	3,499	2,756	71,618	20,835	–
2011	221,321	144,734	109,369	79,687	165,927	88,307	2,578	4,039	87,549	25,290	7,775
2012	209,664	119,493	94,761	67,544	150,036	87,341	1,835	2,237	99,191	25,817	2,237
2013	206,829	–	–	–	–	–	–	–	–	–	–
% change <sup>c</sup>	-1.4	-17.4	-13.4	-15.2	-9.6	-1.1	-28.8	-44.6	13.3	2.1	-71.2
$\rho^d$	-0.900	-0.600	-0.900	-0.900	-0.700	0.100	-0.400	-0.500	0.700	-0.100	–
<i>P</i>	0.037	0.285	0.037	0.037	0.188	0.873	0.505	0.391	0.188	0.873	–

<sup>a</sup> Estimates exclude number of hunters on shooting preserves.

<sup>b</sup> Low values may have been caused by inadvertently excluding Turkey Management Area map on 1998-99 survey instructions.

See 1998-99 annual report.

<sup>c</sup> Percent change from 2010 to 2011 except spring turkey percent change is from 2011 to 2012.

<sup>d</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.

Table 3. Hunter-days, by species, 1991-2013, Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant <sup>a</sup>	Quail <sup>a</sup>	Hare	Woodchuck	Crow	Porcupine
1991	781,499	851,155	2,474,017	1,580,574	2,004,826	1,115,902	13,630	15,397	1,341,605	227,527	–
1992	799,621	696,705	2,210,784	1,331,444	1,814,807	902,308	3,228	11,650	1,191,725	170,185	–
1993	843,987	753,896	1,926,331	1,246,856	1,721,261	859,018	16,683	11,882	1,338,167	201,412	–
1994	1,003,939	857,959	2,104,454	1,438,808	1,919,013	937,974	4,455	15,208	1,294,150	209,854	–
1995	1,084,725	865,565	1,769,363	1,281,923	1,630,631	844,056	6,022	11,712	1,253,239	193,952	–
1996	1,103,556	867,072	1,641,774	1,130,129	1,568,102	733,806	5,061	9,230	1,246,439	186,781	–
1997	1,019,546	834,253	1,525,740	1,022,603	1,462,230	648,985	2,837	6,849	1,241,112	178,724	–
1998	881,026 <sup>b</sup>	691,787 <sup>b</sup>	1,517,673	994,150	1,422,957	775,398	6,704	11,805	1,359,595	222,980	–
1999	1,023,988	807,292	1,268,639	882,167	1,306,098	605,034	5,004	6,864	1,151,067	173,186	–
2000	995,472	780,297	1,295,397	817,545	1,254,598	652,602	8,906	5,351	1,196,679	157,828	–
2001	1,025,011	800,113	1,319,445	894,983	1,371,514	714,970	8,355	10,837	1,280,855	250,869	–
2002	964,575	770,899	1,043,657	723,845	1,069,972	520,372	9,638	8,761	1,178,530	164,521	–
2003	1,069,299	757,304	1,058,453	700,729	1,049,995	595,908	13,834	11,206	1,103,755	237,168	–
2005	1,038,280	684,865	896,931	597,139	922,347	465,017	12,086	8,955	903,986	158,723	–
2006	937,023 <sup>c</sup>	534,136	860,909	582,271	923,826	445,757	14,696	10,957	986,407	169,039	–
2007	894,393 <sup>c</sup>	522,911	825,125	537,558	858,443	405,715	10,625	6,764	958,838	177,617	–
2008	896,165 <sup>c</sup>	486,591	791,313	581,668	893,693	369,914	10,047	5,067	1,049,157	169,391	–
2009	1,034,804 <sup>c</sup>	529,427	815,945	521,708	855,046	386,842	20,502	9,103	800,482	195,430	–
2010	925,561 <sup>c</sup>	457,435	658,703	414,499	726,177	303,398	12,235	5,541	747,656	96,950	–
2011	936,638 <sup>c</sup>	443,254	552,686	350,151	791,481	384,125	10,161	7,869	871,846	157,061	31,460
2012	1,027,644 <sup>d</sup>	400,325	493,894	311,957	789,836	389,694	4,994	4,369	977,518	172,359	31,642
2013	1,046,179 <sup>d</sup>	–	–	–	–	–	–	–	–	–	–
% change <sup>e</sup>	1.8	-9.7	-10.6	-10.9	-0.2	1.4	-50.9	-44.5	12.1	9.7	0.6
$\rho^f$	0.400	-0.900	-0.900	-1.000	-0.700	0.500	-0.400	-0.300	-0.100	-0.100	–
<i>P</i>	0.505	0.037	0.037	<0.001	0.188	0.391	0.505	0.624	0.873	0.873	–

<sup>a</sup> Estimates exclude effort on shooting preserves.

<sup>b</sup> These low values may have been caused by excluding the Turkey Management Area map on the 1998-1999 survey instructions. See 1998-99 annual report.

<sup>c</sup> Spring turkey effort does not include data from special turkey license holders pursuing a second spring turkey.

<sup>d</sup> Spring turkey effort includes junior, regular, and second spring turkey data.

<sup>e</sup> Percent change from 2010 to 2011 except spring turkey percent change is from 2011 to 2012.

<sup>f</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.



Table 4. Harvest per 100 hunter-days, by species, 1991-2013 Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant <sup>a</sup>	Quail <sup>a</sup>	Hare	Woodchuck	Crow	Porcupine
1991	2.1	3.8	59.1	18.6	81.4	24.1	22.0	23.2	97.2	113.0	–
1992	2.3	3.1	67.3	19.1	97.1	29.0	38.3	34.0	97.1	108.8	–
1993	2.9	4.0	60.3	21.9	92.1	29.1	29.0	17.8	95.2	95.1	–
1994	2.8	4.6	48.7	21.1	85.2	25.2	65.1	22.0	99.3	117.8	–
1995	3.4	5.7	57.1	24.6	98.1	29.7	20.0	25.6	97.8	152.6	–
1996	3.1	4.1	49.2	19.3	92.0	29.4	66.9	17.1	92.3	147.5	–
1997	3.0	4.5	54.2	18.4	92.5	33.9	62.2	20.9	100.8	103.5	–
1998	3.7	4.9	60.0	18.5	93.5	27.9	3.6	21.2	88.6	110.8	–
1999	3.7	5.0	56.4	20.1	94.6	34.9	78.7	35.1	97.1	120.8	–
2000	4.4	5.7	59.5	17.8	101.7	35.8	49.1	32.6	99.5	139.2	–
2001	4.8	6.0	53.2	17.8	93.1	34.2	51.2	42.3	92.7	77.8	–
2002	4.3	4.8	57.7	16.4	93.7	39.5	11.0	15.6	107.5	131.9	–
2003	4.0	4.1	55.6	15.2	101.3	39.3	14.9	17.0	106.2	87.6	–
2005	3.1	3.7	47.8	9.8	70.0	37.8	23.9	17.0	98.7	118.7	–
2006	4.0	4.6	47.5	15.3	84.9	31.8	8.4	12.0	92.3	131.6	–
2007	4.1	4.9	50.7	15.3	78.6	41.4	42.4	10.1	87.7	102.6	–
2008	4.5	5.0	58.6	18.7	79.3	29.8	10.9	15.5	94.7	108.2	–
2009	4.1	4.0	51.4	14.6	74.3	39.2	16.8	16.8	88.7	137.5	–
2010	3.4	3.5	51.8	16.0	73.0	34.1	2.5	18.6	91.6	99.9	–
2011	3.4	3.2	52.4	14.9	87.2	30.4	22.2	6.5	94.3	116.3	32.1
2012	3.5	3.5	51.5	16.8	81.5	51.0	14.9	15.8	86.4	168.2	43.0
2013	3.3	–	–	–	–	–	–	–	–	–	–
% change <sup>b</sup>	-5.8	9.0	-1.7	12.3	-6.6	67.7	-33.0	143.7	-8.4	44.6	33.9
$\rho^c$	-0.667	-0.821	-0.300	-0.100	0.500	0.600	0.300	-0.100	-0.600	0.500	–
<i>P</i>	0.219	0.089	0.624	0.873	0.391	0.285	0.624	0.873	0.285	0.391	–

<sup>a</sup> Estimates exclude effort on shooting preserves.

<sup>b</sup> Percent change from 2010 to 2011 except spring turkey percent change is from 2011 to 2012.

<sup>c</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.

Table 5. Number of furbearer hunters and trappers, by species, 1992-2012, Pennsylvania. Survey was not conducted in 2004.

Year	Raccoon	Red Fox	Gray Fox	Coyote <sup>a</sup>	Muskrat	Mink	Beaver <sup>b</sup>	Skunk	Weasel	Opossum
1992	9,525	7,019	6,263	13,643	4,419	2,539	–	2,208	452	3,793
1993	8,195	6,790	6,089	14,260	4,227	2,465	–	1,967	387	3,369
1994	7,066	8,319	7,515	20,597	5,570	3,212	–	3,071	784	4,267
1995	9,718	8,080	6,908	20,413	4,465	2,879	–	2,643	853	3,989
1996	12,951	10,007	8,361	21,937	6,478	3,703	–	3,443	942	6,140
1997	13,750	10,330	8,553	24,526	7,363	4,434	–	3,473	1,125	6,386
1998	12,794	9,982	8,594	30,016	5,900	3,512	–	2,948	733	5,558
1999 <sup>c</sup>	7,555	6,996	6,061	28,265	3,230	2,152	–	1,718	392	2,653
2000 <sup>c</sup>	6,996	7,280	6,353	28,270	3,121	2,026	–	1,750	509	2,870
2001 <sup>c</sup>	7,935	8,234	6,938	36,249	3,997	2,587	–	2,036	619	3,180
2002 <sup>c</sup>	7,295	8,022	6,494	28,535	3,287	2,433	–	2,116	676	3,434
2003 <sup>c</sup>	7,292	6,998	5,547	29,048	3,362	2,305	–	2,132	453	3,585
2005 <sup>c</sup>	8,434	9,583	7,358	35,010	3,815	2,997	2,475	2,813	714	4,479
2006 <sup>c</sup>	10,606	11,331	8,264	36,175	5,630	4,194	3,445	3,603	1,325	5,669
2007 <sup>c</sup>	10,131	10,628	7,811	37,792	4,272	3,674	3,112	3,484	1,447	5,307
2008 <sup>c</sup>	11,498	12,426	9,561	40,982	4,687	3,617	3,090	4,143	1,466	6,344
2009 <sup>c</sup>	8,702	6,651	3,953	40,648	3,261	2,147	1,810	2,587	203	4,482
2010 <sup>c</sup>	11,609	13,635	9,455	43,162	4,539	4,093	2,943	3,891	1,655	6,012
2011 <sup>d</sup>	16,479	17,934	11,360	55,810	6,451	4,925	3,431	4,500	922	7,654
2012	18,522	21,612	13,087	72,863	6,200	4,768	2,757	3,230	515	6,828
% change <sup>e</sup>	12.4	20.5	15.2	30.6	-3.9	-3.2	-19.6	-28.2	-44.1	-10.8
$\rho^f$	0.900	0.900	0.700	0.900	0.600	0.800	0.000	0.000	-0.200	0.600
<i>P</i>	0.037	0.037	0.188	0.037	0.285	0.104	1.000	1.000	0.747	0.285

<sup>a</sup> Combines estimates from Game Take Survey and Furtaker Survey, but does not include mentored youth harvest.

<sup>b</sup> Official estimates using Furtaker Survey data began in 2005-06.

<sup>c</sup> Estimates are minimum estimates that do not account for combination licenses.

<sup>d</sup> Estimates are minimum estimates that do not account for senior combination licenses.

<sup>e</sup> Percent change from 2010-11 to 2011-12.

<sup>f</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.

Table 6. Furbearer harvests, by species, 1991-2012, Pennsylvania. Survey was not conducted in 2004.

Year	Raccoon	Red Fox	Gray Fox	Coyote <sup>a</sup>	Muskrat	Mink	Beaver <sup>b</sup>	Skunk	Weasel	Opossum
1991	130,608	28,495	30,409	3,719	156,014	10,355	–	8,907	481	37,177
1992	124,404	27,611	25,395	4,402	135,533	9,157	–	7,221	343	27,754
1993	118,964	25,862	23,839	6,161	121,657	7,808	–	7,920	526	25,807
1994	186,551	30,649	34,691	6,240	178,145	10,208	–	12,620	723	29,621
1995	120,462	31,110	23,518	6,662	130,442	8,602	–	9,995	687	29,688
1996	214,958	29,623	23,307	7,957	146,013	9,315	–	11,571	589	48,549
1997	194,696	36,923	26,043	6,685	216,066	14,063	–	12,344	1,172	60,717
1998	195,110	47,202	32,922	11,652	148,202	12,238	–	11,190	662	56,287
1999 <sup>c</sup>	96,270	34,297	21,762	8,797	88,426	12,512	–	6,853	336	28,950
2000 <sup>c</sup>	97,509	30,893	20,096	10,160	79,933	7,980	–	7,248	313	25,062
2001 <sup>c</sup>	121,810	33,003	23,275	12,363	121,994	13,214	–	9,245	815	27,192
2002 <sup>c</sup>	106,485	33,007	18,805	11,444	75,340	10,069	–	7,207	406	34,787
2003 <sup>c</sup>	104,781	31,592	15,956	11,697	71,368	6,494	–	9,319	359	33,760
2005 <sup>c</sup>	106,082	40,551	17,616	20,377	70,995	9,335	14,283	9,977	567	43,720
2006 <sup>c</sup>	138,640	45,512	20,754	21,601	121,167	12,680	14,210	10,687	487	48,102
2007 <sup>c</sup>	121,446	52,000	18,613	28,974	72,174	10,004	11,542	9,818	813	41,168
2008 <sup>c</sup>	142,808	44,745	20,845	23,699	74,059	8,632	9,942	12,331	504	54,273
2009 <sup>c</sup>	112,550	37,418	13,793	30,386	63,988	7,261	9,704	8,314	468	37,270
2010 <sup>c</sup>	125,423	54,661	15,691	26,658	58,296	8,204	9,254	8,935	436	36,188
2011 <sup>d</sup>	174,858	68,214	19,380	32,202	89,274	11,855	18,212	13,057	652	49,626
2012	210,146	67,465	17,415	40,109	93,153	12,454	9,712	7,329	604	78,024
% change <sup>e</sup>	20.2	-1.1	-10.1	24.6	4.3	5.1	-46.7	-43.9	-7.4	57.2
$\rho^f$	0.700	0.800	-0.100	0.900	0.600	0.700	0.100	-0.300	0.500	0.300
<i>P</i>	0.188	0.104	0.873	0.037	0.285	0.188	0.873	0.624	0.391	0.624

<sup>a</sup> Combines estimates from the Game Take and Furtaker surveys, but does not include mentored youth harvest.

<sup>b</sup> Official estimates using Furtaker Survey data began in 2005-06.

<sup>c</sup> Estimates are minimum estimates that do not account for combination licenses.

<sup>d</sup> Estimates are minimum estimates that do not account for senior combination licenses.

<sup>e</sup> Percent change from 2010-11 to 2011-12.

<sup>f</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.

Table 7. Trapper and hunter-days, by species, Pennsylvania.

<b>Year</b>	<b>Raccoon</b>	<b>Red Fox</b>	<b>Gray Fox</b>	<b>Coyote<sup>a</sup></b>	<b>Muskrat</b>	<b>Mink</b>	<b>Beaver</b>	<b>Skunk</b>	<b>Weasel</b>	<b>Opossum</b>
2011	400,069	341,727	212,973	548,199	99,573	77,945	58,183	126,782	13,607	183,064
2012	464,587	400,790	232,433	633,720	113,017	86,481	45,326	87,537	6,359	200,074
% change	16.1	17.3	9.1	15.6	13.5	11.0	-22.1	-31.0	-53.3	9.3

<sup>a</sup> Combines estimates from Game Take Survey and Furtaker Survey, but does not include mentored youth data.

Table 8. Trapper and hunter-trapnights, by species, Pennsylvania.

<b>Year</b>	<b>Raccoon</b>	<b>Red Fox</b>	<b>Gray Fox</b>	<b>Coyote</b>	<b>Muskrat</b>	<b>Mink</b>	<b>Beaver</b>	<b>Skunk</b>	<b>Weasel</b>	<b>Opossum</b>
2011	4,304,682	3,172,214	2,092,789	2,251,668	1,564,493	900,813	362,569	2,014,271	106,017	2,535,478
2012	5,612,477	4,515,979	3,126,389	3,315,267	1,715,728	1,132,920	281,608	2,125,119	52,867	3,453,916
% change	30.4	42.4	49.4	47.2	9.7	25.8	-22.3	5.5	-50.1	36.2

Table 9. Harvest per 100 trapper and hunter-days, by species, Pennsylvania.

<b>Year</b>	<b>Raccoon</b>	<b>Red Fox</b>	<b>Gray Fox</b>	<b>Coyote<sup>a</sup></b>	<b>Muskrat</b>	<b>Mink</b>	<b>Beaver</b>	<b>Skunk</b>	<b>Weasel</b>	<b>Opossum</b>
2011	43.7	20.0	9.1	5.9	89.7	15.2	31.3	10.3	4.8	27.1
2012	45.2	16.8	7.5	6.3	82.4	14.4	21.4	8.4	9.5	39.0
% change	3.5	-15.7	-17.7	7.7	-8.1	-5.3	-31.5	-18.7	98.2	43.9

<sup>a</sup> Combines estimates from Game Take Survey and Furtaker Survey, but does not include mentored youth data.

Table 10. Harvest per 100 trapnights (number of days × average number of traps), by species, Pennsylvania.

<b>Year</b>	<b>Raccoon</b>	<b>Red Fox</b>	<b>Gray Fox</b>	<b>Coyote<sup>a</sup></b>	<b>Muskrat</b>	<b>Mink</b>	<b>Beaver</b>	<b>Skunk</b>	<b>Weasel</b>	<b>Opossum</b>
2011	4.1	2.2	0.9	0.7	5.7	1.3	5.0	0.6	0.6	2.0
2012	3.7	1.5	0.6	0.6	5.4	1.1	3.4	0.3	1.1	2.3
% change	-7.8	-30.5	-39.8	-17.0	-4.9	-16.5	-31.3	-46.8	85.8	15.4

<sup>a</sup> Uses data from Furtaker Survey only.

Table 11. Estimated number of resident junior license holders participating in junior hunts, Pennsylvania.

<b>Year</b>	<b>Spring Turkey</b>	<b>Pheasant</b>	<b>Squirrel</b>	<b>Rabbit</b>
2006	8,976	5,660	7,652	–
2007	5,911	3,874	6,165	–
2008	7,354	5,272	8,941	–
2009	1,876	2,003	4,713	–
2010	8,096	5,048	7,850	4,371
2011	12,710	4,778	7,873	2,649
2012	9,841	3,891	8,439	1,800
2013	10,302	–	–	–
% change <sup>a</sup>	4.7	-18.6	7.2	-32.0
$\rho^b$	-0.300	0.400	-0.800	-1.000
<i>P</i>	0.624	0.505	0.104	<0.001

<sup>a</sup> Percent change from 2011 to 2012 except spring turkey percent change is from 2012 to 2013.

<sup>b</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey

Table 12. Estimated harvests by resident junior license holders during junior hunts, Pennsylvania.

<b>Year</b>	<b>Spring Turkey</b>	<b>Pheasant</b>	<b>Squirrel</b>	<b>Rabbit</b>
2006	613	3,218	12,259	–
2007	1,650	5,964	18,101	–
2008	1,638	3,412	29,143	–
2009	1,772	3,671	17,453	–
2010	1,478	4,617	22,625	5,325
2011	1,588	3,201	14,921	1,588
2012	2,638	7,042	14,984	900
2013	1,153	–	–	–
% change <sup>a</sup>	-56.3	120.0	0.4	-43.3
$\rho^b$	0.700	-0.400	0.000	-1.000
<i>P</i>	0.188	0.505	1.000	<0.001

<sup>a</sup> Percent change from 2011 to 2012 except spring turkey percent change is from 2012 to 2013.

<sup>b</sup> Spearman rho correlation coefficient from data collected from 2008-2012, and 2009-2013 for spring turkey.

Table 13. Estimated number of participating mentored youth permit holders, Pennsylvania.

<b>Year</b>	<b>Spring turkey</b>	<b>Fall turkey</b>	<b>Squirrel</b>	<b>Woodchuck</b>	<b>Coyote</b>
2012	–	3,628	13,506	3,231	1,827
2013	7,839	–	–	–	–

Table 14. Estimated harvests by mentored youth permit holders, Pennsylvania.

<b>Year</b>	<b>Spring turkey</b>	<b>Fall turkey</b>	<b>Squirrel</b>	<b>Woodchuck</b>	<b>Coyote</b>
2012	–	265	27,808	9,164	106
2013	1,299	–	–	–	–

Table 15. Estimated days hunted by mentored youth permit holders, Pennsylvania.

<b>Year</b>	<b>Spring turkey</b>	<b>Fall turkey</b>	<b>Squirrel</b>	<b>Woodchuck</b>	<b>Coyote</b>
2012	–	8,581	56,859	17,929	6,807
2013	37,857	–	–	–	–