PENNSYLVANIA GAME COMMISSION
BUREAU OF WILDLIFE MANAGEMENT
ANNUAL PROJECT REPORT

PROJECT CODE NO.: 06110

TITLE: Survey and Statistical Support

JOB CODE NO.: 11101

TITLE: Game Take, Furtaker, Spring Turkey Hunter Surveys

PERIOD COVERED: 1 July 2022 to 30 June 2023

WORK LOCATION(S): Harrisburg, Pennsylvania

PREPARED BY: Joshua B. Johnson

DATE: 13 September 2023

ABSTRACT For the Game Take Survey, a mixed-mode (Internet and mail) survey was conducted, mailing survey invitations and questionnaires to a random sample of 2022-23 general and mentored hunting license purchasers (n = 20,501) stratified by license type to estimate numbers of hunters, harvests, and hunter-days for game species during the 2022-23 hunting seasons. After 5 mailings, 42.8% of recipients responded. Overall, between the 2021-22 and 2022-23 hunting seasons, harvests, hunters, and hunter effort decreased for most species covered by Game Take Survey. Five-year trends indicate declines in harvest for fall turkey and woodchuck. Five-year trends show declines in hunter participation for fall turkey, rabbit, grouse, woodchuck, and crow. A mixed-mode approach was used to conduct the Furtaker Survey, inviting 8,000 furtaker, junior combination, and senior combination license holders to complete a survey; 47.8% responded. Between the 2021-22 and 2022-23 seasons, the number furbearer harvests increased for raccoon, gray fox, coyote, beaver, weasel, and opossum, and decreased for red fox, muskrat, mink, and skunk. Five-year trends in harvest have remained stable for all species in the Furtaker Survey. I received 79.9% response to the 2023 Spring Turkey Hunter Survey, which was mailed to 7,768 respondents to the Game Take Survey.

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). For the 2022-23 season, mentored hunters were added as a sampling stratum, and the Mentored Youth Hunter Survey was discontinued. The mentored hunter stratum included youth, adult, and nonresident license types, and were further separated into purchasers and nonpurchasers the same as other license types are in the Game Take Survey for a total of ten strata. Sample size was increased to 20,500 to accommodate the mentored hunter stratum. Game Take Survey instrument changes included eliminating collection of fall turkey sex, beard, and spur data, and ring-necked pheasant hen and cock data. Fall turkey sex, beard, and spur data are collected via harvest reporting. Ring-necked pheasant estimates will be totals only, with no separate estimates for hens and cocks.

The Furtaker Survey has been conducted since the 1990-91 season. No changes were made to the 2022-23 Furtaker Survey instrument or implementation.

I 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, nonresident, and mentored hunter, and whether they purchased additional permits or stamps. I used optimal allocation methods to estimate number of recipients of each license type (Johnson et al. 2012). I included junior and senior combination license holders and all furtaker license holders in the Furtaker Survey sample frame.

The Spring Turkey Hunter Survey began as a separate survey in 2012. Compared to recent years, a random sample of Pennsylvania hunting license buyers was not used to supplement the pool of 2022-23 Game Take Survey respondents. Sex, beard, and spur data were not collected on the instrument, as these data are obtained from harvest reports.

Survey Implementation

We used Qualtrics software to develop and implement Game Take, Furtaker, and Spring Turkey Hunter surveys. The software allows online response as well as integration with print shop and mailroom processes for paper surveys and response.

For Game Take Survey, I conducted 5 mailings (an invitation for Internet response mailed 14 February, a postcard reminder for Internet response mailed 27 February, and 3 follow-up mailings for mail response to nonrespondents mailed 17 March, 27 April, and 12 June). Data entry close for Game Take Survey was 24 July.

I conducted 4 mailings for the Furtaker Survey: an invitation for Internet response mailed 1 April, a postcard reminder for Internet response mailed 12 April, and 2 follow-up mailings for mail response to nonrespondents mailed 28 April and 21 May. Data entry close for Furtaker Survey was 3 August.

I mailed 20,500 Game Take questionnaires and 8,000 Furtaker questionnaires.

For the Spring Turkey Hunter Survey, I conducted 6 mailings (an email invite on 30 May; a reminder email on 2 June, an invitation for Internet response mailed 6 June, a postcard reminder

for Internet response mailed 15 June, and 2 follow-up mailings for mail response to nonrespondents mailed 3 July and 9 August). Data entry close for Spring Turkey Hunter Survey was 12 September.

I mailed Spring Turkey Hunter Survey to 7,768 respondents to the Game Take Survey.

Data Analysis

All harvest survey data were passed through an extensive cleansing process, which corrected for maximum allowable days of hunting and trapping, maximum allowable harvests, seasons allowed in certain Wildlife Management Units, and checking that the respondents' privilege codes (i.e., licenses purchased) allowed for the hunting and taking of certain species.

I estimated total harvest, number of participants, hunter-days, and harvest per 100 hunter-days based on 844,058 general hunting licenses sold for the Game Take Survey and Spring Turkey Hunter Survey, and 47,078 furtaker licenses and 140,414 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. I calculated percent change in harvest, participation, effort and harvest per unit effort between 2021-22 and 2022-23 seasons. I analyzed data from the past 5 years (2018-19 through 2022-23) using Spearman rho correlation coefficients (P values ≤ 0.05 were considered significant).

For species in Furtaker Survey that include trapping and hunting data, total harvest per day of effort rates reflect total harvest from both hunting and trapping, and both hunting days and trapping days of effort. Harvest per trapnight data reflect only those harvests reported from trapping and associated trapnight effort data.

RESULTS

For the Game Take and Furtaker surveys, I received responses from 8,598 (3,233 Internet, 5,365 mail) and 3,769 (1,608 Internet, 2,161 mail) survey recipients, respectively. The response rates, after adjusting for undeliverable questionnaires, were 42.8% (37.6% Internet, 62.4% mail) for the Game Take Survey, and 47.8% (42.7% Internet, 57.3% mail) for the Furtaker Survey. The Game Take Survey response rate was 5.3 percentage points lower than in 2021-22, largely due to newly included mentored hunter strata, whose response rate was 32.2%. The Furtaker Survey response rate was 3.7 percentage points higher than the 2021-22 survey. Of the 200 junior combination license holders that responded to the Furtaker Survey, 13 (6.5%) indicated hunting or trapping for furbearers. Of the 256 senior combination license holders that responded to the Furtaker Survey, 18 (7.0%) indicated hunting or trapping for furbearers.

For the Spring Turkey Hunter survey, 6,155 (2,550 Internet, 3,605 mail) responses were processed. Overall response rates after adjusting for undeliverable questionnaires were 79.9% (41.4% Internet, 58.6% mail) for the Spring Turkey Hunter Survey.

Annual Changes

Compared to the 2021-22 season, harvests increased for spring turkey, fall turkey, woodcock, hare, porcupine, and Canada goose, and decreased for rabbit, grouse, squirrel, pheasant, dove, woodchuck, and crow in 2022-23 (Table 1). The number of hunters increased for spring

turkey, hare, porcupine, and Canada goose and decreased for woodcock, dove, fall turkey, rabbit, grouse, squirrel, pheasant, woodchuck, and crow (Table 2). Number of hunter-days increased for spring turkey, rabbit and Canada goose, and decreased for fall turkey, grouse, squirrel, pheasant, woodcock, dove, hare, woodchuck, crow, and porcupine (Table 3). Harvest per 100 hunter-days (a standardized measure of hunter success) increased for spring turkey, fall turkey, woodcock, hare, porcupine, and Canada goose, and decreased for rabbit, grouse, squirrel, pheasant, dove, woodchuck, and crow (Table 4).

The numbers of hunters and trappers of furbearers increased for 3 of 10 species, including gray fox, coyote, and beaver (Table 5). Furbearer harvests increased for 6 of 10 species, including raccoon, gray fox, coyote, beaver, weasel and opossum (Table 6). Furbearer trapper and hunter days decreased for all species except coyote and beaver (Table 7). Number of trapnights (number of days × average number of traps set) increased for raccoon, red fox, gray fox, coyote, beaver, skunk, and opossum (Table 8). Harvest per 100 hunter and trapper days increased for raccoon, red fox, gray fox, mink, skunk, weasel, and opossum (Table 9). Harvest per 100 trapnights increased for raccoon, gray fox, mink, and weasel (Table 10).

Participation increased for spring turkey junior hunt, and decreased for pheasant and rabbit junior hunts compared to the previous season (Table 11). Estimated harvests during junior hunts increased for spring turkey and pheasant, and decreased for rabbit (Table 12).

Long-term Trends

Over the past 5 years, harvests have significantly declined ($P < 0.05$) for fall turkey, and woodchuck, increased for and remained stable for spring turkey, rabbit, grouse, squirrel, pheasant, woodcock, dove, hare, crow, and porcupine (Table 1). Numbers of hunters significantly declined for fall turkey, rabbit, grouse, woodchuck, and crow, and remained stable for spring turkey, squirrel, pheasant, woodcock, dove, hare, and porcupine (Table 2). Hunter-days significantly declined for woodchuck, increased for and remained stable for spring turkey, fall turkey, rabbit, grouse, squirrel, pheasant, woodcock, dove, hare, crow and porcupine (Table 3). Harvest per 100 hunter days significantly decreased for grouse and remained stable for all other species covered by the Game Take Survey (Table 4).

Five-year trends in junior hunt participation decreased for rabbit and remained stable for spring turkey and pheasant (Table 11). Five-year trends in junior hunt harvests remained stable for spring turkey, pheasant, and rabbit (Table 12).

Five-year trends in numbers of hunters and trappers decreased for red fox, gray fox, and muskrat (Table 5). Furbearer harvests remained stable for all species over the past 5 years (Table 6). Trapper and hunter-days remained stable for all species over the past 5 years (Table 7). Trapnights decreased for muskrat and remained stable for all species (Table 8). Five-year trends in harvests per 100 trapper and hunter-days decreased for opossum and remained stable for all other species (Table 9). Harvests per 100 trapnights decreased for opossum and remained stable the past 5 years for all species (Table 10).

RECOMMENDATIONS

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

2. Continue to include Mentored Hunters as a sampling stratum in Game Take and Spring Turkey Hunter surveys.

3. Continue to evaluate cover letters, survey instruments, survey schedule, and data cleansing protocols to improve response rates and data accuracy.

4. Continue to evaluate Qualtrics software for efficiencies in survey protocol and implementation.

LITERATURE CITED

Boyd, R. C., and M. Weaver. 2011. Game Take and Furtaker Surveys. Annual Job Report 11101. Pennsylvania Game Commission, Harrisburg, USA.

Johnson, J. B., Boyd, R. C., and M. Weaver. 2012. Game Take and Furtaker Surveys. Annual Job Report 11101. Pennsylvania Game Commission, Harrisburg, USA.

Table 1. Harvest, by species, 2001–2023, Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant[a]	Woodcock	Dove	Hare	Woodchuck	Crow	Porcupine	Canada Goose
2001	49,186	48,008	701,551	159,610	1,276,603	244,282	32,504	460,971	4,584	1,187,114	195,273	–	197,767
2002	41,147	37,346	602,234	118,577	1,002,309	205,696	31,167	462,538	1,369	1,267,265	217,068	–	173,391
2003	42,876	31,100	588,310	106,587	1,063,996	234,196	42,434	500,980	1,908	1,171,888	207,707	–	228,310
2005	32,593	25,171	428,414	58,596	646,033	175,676	37,792	409,769	1,522	892,391	188,460	–	208,704
2006	37,845[b]	24,481	409,350	89,145	784,741	141,775	39,782	384,625	1,310	910,654	222,382	–	181,708
2007	36,294[b]	25,369	418,139	82,020	674,991	168,094	26,924	416,844	685	840,523	182,320	–	188,266
2008	40,483[b]	24,288	463,935	108,693	708,898	110,331	41,556	409,837	783	993,207	183,203	–	212,158
2009	42,478[b]	20,934	419,721	75,997	635,193	151,737	15,171	316,930	1,525	710,411	268,711	–	195,105
2010	31,908[b]	15,884	341,288	66,385	530,125	103,366	25,247	181,533	1,030	684,927	96,831	–	89,145
2011	31,769[b]	14,300	289,547	52,243	690,141	116,828	–	–	510	821,965	182,659	10,096	–
2012	35,621[c]	14,074	254,328	52,289	643,382	198,704	8,420	–	690	844,515	289,833	13,596	–
2013	34,156[c]	16,273	230,849	40,308	573,538	220,752	7,116	–	620	959,879	140,997	15,213	–
2014	39,513[c]	18,013	230,417	34,848	467,888	177,068	8,691	226,083	601	560,120	261,374	12,400	–
2015	39,934[c]	14,861	177,588	28,434	460,311	205,366	7,293	129,112	738	491,503	65,028	7,867	–
2016	34,512[c]	10,708	209,488	22,581	397,658	221,588	6,684	148,254	2,015	535,404	123,601	7,117	–
2017	36,970[c]	9,168	83,314	18,393	364,565	120,459	8,183	136,342	53	472,174	100,411	4,314	–
2018	39,080[c]	9,129	121,710	8,717	298,040	168,532	4,986	156,671	535	463,050	87,091	4,768	–
2019	35,639[c]	9,005	108,452	10,254	376,000	179,023	4,554	125,197	230	388,280	30,271	6,338	–
2020	32,878[c]	8,300	127,369	8,782	381,536	216,982	8,668	144,743	998	362,572	36,080	5,292	90,791
2021	26,776[c]	6,622	82,663	6,184	287,271	196,673	4,537	148,139	360	273,728	44,014	3,451	70,179
2022	34,068[c]	7,613	67,672	4,314	219,891	177,006	4,707	92,781	526	234,305	24,339	4,782	96,533
2023	39,524[c]	–	–	–	–	–	–	–	–	–	–	–	–
% change[d]	16.0%	15.0%	-18.1%	-30.2%	-23.5%	-10.0%	3.7%	-37.4%	46.0%	-14.4%	-44.7%	38.6%	70.3%
ρ[e]	0.300	-0.900	-0.700	-0.700	-0.600	0.300	-0.300	-0.600	-0.100	-1.000	-0.600	-0.200	–
P	0.624	0.037	0.188	0.188	0.285	0.624	0.624	0.285	0.873	<0.001	0.285	0.747	–

[a] Estimates exclude harvests on shooting preserves.
[b] Spring turkey harvest estimate does not include second spring turkey harvests from special turkey license holders.
[c] Spring turkey harvest estimate includes junior, regular, and second spring turkey data.
[d] Percent change from 2021 to 2022 except spring turkey percent change is from 2022 to 2023.
[e] Spearman rho correlation coefficient from data collected from 2018–2022, and 2019–2023 for spring turkey.

Table 2. Hunters, by species, 2001–2023, Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant[a]	Woodcock	Dove	Hare	Woodchuck	Crow	Porcupine	Canada Goose
2001	230,115	228,564	213,295	161,186	231,436	146,751	14,411	51,144	4,930	99,787	33,343	–	38,292
2002	218,931	217,099	195,078	149,106	201,694	123,879	12,652	50,883	3,818	91,149	28,470	–	41,240
2003	246,820	211,967	181,426	134,115	199,922	130,676	15,321	46,580	5,091	92,986	27,591	–	44,467
2005	247,304	203,982	149,647	112,210	166,476	105,508	13,615	41,328	5,033	71,682	23,380	–	37,426
2006	245,024	182,233	145,712	105,282	174,151	96,590	11,978	40,145	5,211	80,522	26,880	–	35,226
2007	223,808	162,323	135,956	96,429	154,653	90,548	12,574	40,166	3,030	75,554	23,228	–	34,803
2008	216,551	152,294	137,842	102,139	171,786	86,052	11,709	39,780	2,890	80,116	25,706	–	33,814
2009	228,903	156,752	139,772	104,228	157,907	91,549	9,935	37,895	4,703	69,407	31,519	–	31,732
2010	237,037	163,433	125,537	91,003	150,309	71,579	8,223	25,490	2,756	71,618	20,835	–	16,895
2011	221,321	144,734	109,369	79,687	165,927	88,307	–	–	4,039	87,549	25,290	7,775	–
2012	209,664	119,493	94,761	67,544	150,036	87,341	5,058	–	2,237	99,191	25,817	6,597	–
2013	206,829	193,507	91,628	66,113	145,992	92,091	6,706	–	2,410	109,559	25,271	8,666	–
2014	209,556	196,459	74,528	50,925	120,538	80,280	4,469	21,429	4,796	68,088	17,741	6,128	–
2015	198,690	152,094	73,286	49,726	117,277	86,349	5,872	17,169	3,434	63,463	13,352	6,209	–
2016	193,804	125,211	62,378	40,094	100,482	74,953	4,402	16,218	3,014	62,628	13,844	5,011	–
2017	160,892	118,976	45,565	32,693	95,252	35,738	5,977	16,395	1,248	56,948	11,523	2,695	–
2018	163,487	100,496	45,333	24,144	79,164	33,709	3,952	16,531	1,945	49,109	9,781	3,861	–
2019	160,700	93,624	40,425	21,547	89,383	35,692	3,607	14,418	1,455	46,992	9,827	3,012	–
2020	181,849	98,712	40,886	21,177	92,947	43,216	4,215	15,008	2,512	44,532	8,362	3,854	17,653
2021	150,429	79,839	38,325	18,061	79,658	42,414	4,538	15,965	1,129	40,974	7,804	2,267	12,088
2022	157,631	70,480	34,764	16,030	67,993	39,406	3,822	15,031	1,272	36,724	7,673	2,824	17,198
2023	160,762	–	–	–	–	–	–	–	–	–	–	–	–
% change[b]	2.0%	-11.7%	-9.3%	-11.2%	-14.6%	-7.1%	-15.8%	-5.9%	12.7%	-10.4%	-1.7%	24.6%	42.3%
P[c]	-0.100	-0.900	-0.900	-1.000	-0.300	0.600	0.200	-0.100	-0.600	-1.000	-0.900	-0.800	–
P	0.873	0.037	0.037	<0.001	0.624	0.285	0.747	0.873	0.285	<0.001	0.037	0.104	–

[a] Estimates exclude number of hunters on shooting preserves.
[b] Percent change from 2021 to 2022 except spring turkey percent change is from 2022 to 2023.
[c] Spearman rho correlation coefficient from data collected from 2018–2022, and 2019–2023 for spring turkey.

Table 3. Hunter-days, by species, 2001–2023, Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant[a]	Woodcock	Dove	Hare	Woodchuck	Crow	Porcupine	Canada Goose
2001	1,025,011	800,113	1,319,445	894,983	1,371,514	714,970	66,333	217,529	10,837	1,280,855	250,869	–	284,517
2002	964,575	770,899	1,043,657	723,845	1,069,972	520,372	52,222	209,960	8,761	1,178,530	164,521	–	277,528
2003	1,069,299	757,304	1,058,453	700,729	1,049,995	595,908	75,627	210,869	11,206	1,103,755	237,168	–	331,784
2005	1,038,280	684,865	896,931	597,139	922,347	465,017	66,675	215,773	8,955	903,986	158,723	–	255,605
2006	937,023[b]	534,136	860,909	582,271	923,826	445,757	69,440	197,412	10,957	986,407	169,039	–	238,934
2007	894,393[b]	522,911	825,125	537,558	858,443	405,715	69,846	185,568	6,764	958,838	177,617	–	231,659
2008	896,165[b]	486,591	791,313	581,668	893,693	369,914	65,497	184,800	5,067	1,049,157	169,391	–	238,906
2009	1,034,804[b]	529,427	815,945	521,708	855,046	386,842	45,099	178,587	9,103	800,482	195,430	–	247,165
2010	925,561[b]	457,435	658,703	414,499	726,177	303,398	34,052	97,021	5,541	747,656	96,950	–	74,537
2011	936,638[b]	443,254	552,686	350,151	791,481	384,125	–	–	7,869	871,846	157,061	31,460	–
2012	1,027,644[c]	400,325	493,894	311,957	789,836	389,694	29,747	–	4,369	977,518	172,359	31,642	–
2013	1,046,179[c]	692,712	449,083	307,317	712,877	428,048	40,617	–	4,197	1,157,077	139,799	28,069	–
2014	970,701[c]	647,436	367,444	257,353	650,653	393,848	25,283	96,297	8,146	725,799	101,754	50,168	–
2015	887,536[c]	561,467	357,584	247,438	544,958	394,141	23,928	66,271	5,732	673,495	91,573	19,114	–
2016	894,444[c]	453,303	328,691	186,094	511,605	366,614	15,085	67,973	7,869	676,867	81,859	14,116	–
2017	741,072[c]	434,112	200,116	138,806	452,669	186,907	29,057	75,050	2,008	678,183	101,741	9,450	–
2018	731,052[c]	357,166	246,356	94,230	396,995	218,509	17,759	61,027	3,956	647,291	75,352	13,893	–
2019	789,508[c]	319,393	206,488	96,735	457,229	220,994	14,040	61,932	1,936	495,465	42,313	8,480	–
2020	977,995[c]	357,928	212,841	96,962	461,273	265,049	33,907	74,674	4,753	569,322	28,982	10,831	117,722
2021	751,184[c]	276,085	174,799	85,500	386,856	254,216	32,511	60,465	2,420	396,424	55,743	19,513	76,408
2022	794,679[c]	224,408	184,511	60,542	342,086	242,902	21,016	58,743	2,042	375,433	52,035	17,328	90,461
2023	818,120[c]	–	–	–	–	–	–	–	–	–	–	–	–
% change[d]	2.9%	-18.7%	5.6%	-29.2%	-11.6%	-4.5%	-35.4%	-2.8%	-15.6%	-5.3%	-6.7%	-11.2%	18.4%
P[e]	0.200	-0.700	-0.800	-0.600	-0.600	0.600	0.500	-0.600	-0.200	-0.900	-0.200	0.600	–
P	0.747	0.188	0.104	0.285	0.285	0.285	0.391	0.285	0.747	0.037	0.747	0.285	–

[a] Estimates exclude effort on shooting preserves.
[b] Spring turkey effort does not include data from special turkey license holders pursuing a second spring turkey.
[c] Spring turkey effort includes junior, regular, and second spring turkey data.
[d] Percent change from 2021 to 2022 except spring turkey percent change is from 2022 to 2023.
[e] Spearman rho correlation coefficient from data collected from 2018–2022, and 2019–2023 for spring turkey.

Table 4. Harvest per 100 hunter-days, by species, 2001–2023 Pennsylvania. Survey was not conducted in 2004.

Year	Spring Turkey	Fall Turkey	Rabbit	Grouse	Squirrel	Pheasant[a]	Woodcock	Dove	Hare	Woodchuck	Crow	Porcupine	Canada Goose
2001	4.80	6.00	53.17	17.83	93.08	34.17	49.00	211.91	42.30	92.68	77.84	–	69.51
2002	4.27	4.84	57.70	16.38	93.68	39.53	59.68	220.30	15.63	107.53	131.94	–	62.48
2003	4.01	4.11	55.58	15.21	101.33	39.30	56.11	237.58	17.03	106.17	87.58	–	68.81
2005	3.14	3.68	47.76	9.81	70.04	37.78	56.68	189.91	17.00	98.72	118.74	–	81.65
2006	4.04	4.58	47.55	15.31	84.94	31.81	57.29	194.83	11.96	92.32	131.56	–	76.05
2007	4.06	4.85	50.68	15.26	78.63	41.43	38.55	224.63	10.13	87.66	102.65	–	81.27
2008	4.52	4.99	58.63	18.69	79.32	29.83	63.45	221.77	15.45	94.67	108.15	–	88.80
2009	4.10	3.95	51.44	14.57	74.29	39.22	33.64	177.47	16.75	88.75	137.50	–	78.94
2010	3.45	3.47	51.81	16.02	73.00	34.07	74.14	187.11	18.59	91.61	99.88	–	119.60
2011	3.39	3.23	52.39	14.92	87.20	30.41	–	–	6.48	94.28	116.30	32.09	–
2012	3.47	3.52	51.49	16.76	81.46	50.99	28.31	–	15.79	86.39	168.16	42.97	–
2013	3.26	2.35	51.40	13.12	80.45	51.57	17.52	–	14.77	82.96	100.86	54.20	–
2014	4.07	2.78	62.71	13.54	71.91	44.96	34.37	234.78	7.38	77.17	256.87	24.72	–
2015	4.50	2.65	49.66	11.49	84.47	52.10	30.48	194.82	12.88	72.98	71.01	41.16	–
2016	3.86	2.36	63.73	12.13	77.73	60.44	44.31	218.11	25.61	79.10	150.99	50.42	–
2017	4.99	2.11	41.63	13.25	80.54	64.45	28.16	181.67	2.64	69.62	98.69	45.65	–
2018	5.35	2.56	49.40	9.25	75.07	77.13	28.08	256.72	13.52	71.54	115.58	34.32	–
2019	4.51	2.82	52.52	10.60	82.23	81.01	32.44	202.15	11.88	78.37	71.54	74.74	–
2020	3.36	2.32	59.84	9.06	82.71	81.86	25.56	193.83	21.00	63.68	124.49	48.86	77.12
2021	3.56	2.40	47.29	7.23	74.26	77.36	13.96	245.00	14.88	69.05	78.96	17.69	91.85
2022	4.29	3.39	36.68	7.13	64.28	72.87	22.40	157.94	25.76	62.41	46.77	27.60	106.71
2023	4.83	–	–	–	–	–	–	–	–	–	–	–	–
% change[b]	12.7%	41.4%	-22.4%	-1.5%	-13.4%	-5.8%	60.5%	-35.5%	73.1%	-9.6%	-40.8%	56.0%	41.3%
ρ[c]	0.400	0.200	0.400	-0.900	-0.100	0.700	-0.700	0.300	0.800	-0.500	-0.100	-0.200	–
P	0.505	0.747	0.505	0.037	0.873	0.188	0.188	0.624	0.104	0.391	0.873	0.747	–

[a] Estimates exclude effort on shooting preserves.
[b] Percent change from 2021 to 2022 except spring turkey percent change is from 2022 to 2023.
[c] Spearman rho correlation coefficient from data collected from 2018–2022, and 2019–2023 for spring turkey.

Table 5. Number of furbearer hunters and trappers, by species, 2001–2022, Pennsylvania. Survey was not conducted in 2004.

Year	Raccoon	Red Fox	Gray Fox	Coyote[a]	Muskrat	Mink	Beaver[b]	Skunk	Weasel	Opossum
2001[c]	7,935	8,234	6,938	36,249	3,997	2,587	–	2,036	619	3,180
2002[c]	7,295	8,022	6,494	28,535	3,287	2,433	–	2,116	676	3,434
2003[c]	7,292	6,998	5,547	29,048	3,362	2,305	–	2,132	453	3,585
2005[c]	8,434	9,583	7,358	35,010	3,815	2,997	2,475	2,813	714	4,479
2006[c]	10,606	11,331	8,264	36,175	5,630	4,194	3,445	3,603	1,325	5,669
2007[c]	10,131	10,628	7,811	37,792	4,272	3,674	3,112	3,484	1,447	5,307
2008[c]	11,498	12,426	9,561	40,982	4,687	3,617	3,090	4,143	1,466	6,344
2009[c]	8,702	6,651	3,953	40,648	3,261	2,147	1,810	2,587	203	4,482
2010[c]	11,609	13,635	9,455	43,162	4,539	4,093	2,943	3,891	1,655	6,012
2011[d]	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
2013	20,205	22,210	13,652	77,702	7,443	4,813	3,040	3,897	414	8,560
2014	22,743	21,743	13,730	52,822	8,739	6,704	4,618	4,675	2,121	8,772
2015	17,196	19,313	11,462	55,954	5,219	3,870	4,515	3,166	873	6,124
2016	14,191	19,012	10,809	50,777	3,648	3,962	2,638	2,770	547	4,267
2017	13,536	16,971	10,587	48,453	3,614	2,617	2,131	2,821	619	5,741
2018	12,949	17,967	10,279	41,954	3,205	2,097	3,174	1,589	516	4,840
2019	13,756	17,309	9,611	43,305	3,025	2,185	3,239	2,568	269	4,644
2020	12,046	17,810	8,615	37,631	2,497	2,496	3,612	2,081	274	4,100
2021	14,095	16,019	6,975	37,889	2,745	2,662	2,322	3,250	723	4,909
2022	13,348	15,345	8,374	47,388	2,418	1,487	3,856	2,257	510	4,089
% change[e]	-5.3%	-4.2%	20.1%	25.1%	-11.9%	-44.1%	66.1%	-30.6%	-29.5%	-16.7%
ρ[f]	0.300	-0.900	-0.900	0.200	-0.900	0.000	0.400	0.500	0.200	-0.400
P	0.624	0.037	0.037	0.747	0.037	1.000	0.505	0.391	0.747	0.505

[a] Combines estimates from Game Take Survey and Furtaker Survey, but does not include mentored youth harvest.
[b] Official estimates using Furtaker Survey data began in 2005-06.
[c] Estimates are minimum estimates that do not account for combination licenses.
[d] Estimates are minimum estimates that do not account for senior combination licenses.
[e] Percent change from 2021 to 2022.
[f] Spearman rho correlation coefficient from data collected from 2018–2022.

Table 6. Furbearer harvests, by species, 2001–2022, Pennsylvania. Survey was not conducted in 2004.

Year	Raccoon	Red Fox	Gray Fox	Coyote[a]	Muskrat	Mink	Beaver[b]	Skunk	Weasel	Opossum
2001[c]	121,810	33,003	23,275	12,363	121,994	13,214	–	9,245	815	27,192
2002[c]	106,485	33,007	18,805	11,444	75,340	10,069	–	7,207	406	34,787
2003[c]	104,781	31,592	15,956	11,697	71,368	6,494	–	9,319	359	33,760
2005[c]	106,082	40,551	17,616	20,377	70,995	9,335	14,283	9,977	567	43,720
2006[c]	138,640	45,512	20,754	21,601	121,167	12,680	14,210	10,687	487	48,102
2007[c]	121,446	52,000	18,613	28,974	72,174	10,004	11,542	9,818	813	41,168
2008[c]	142,808	44,745	20,845	23,699	74,059	8,632	9,942	12,331	504	54,273
2009[c]	112,550	37,418	13,793	30,386	63,988	7,261	9,704	8,314	468	37,270
2010[c]	125,423	54,661	15,691	26,658	58,296	8,204	9,254	8,935	436	36,188
2011[d]	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
2013	197,380	61,392	15,700	40,956	83,880	7,856	15,134	7,733	110	57,138
2014	203,311	55,659	21,765	31,675	115,742	14,532	17,607	13,969	372	59,643
2015	149,098	65,158	16,609	38,611	66,397	8,530	16,920	6,920	216	36,218
2016	92,013	47,442	10,725	25,793	43,436	7,801	7,888	6,133	278	22,518
2017	89,440	65,513	13,974	44,440	24,792	4,263	7,417	7,467	277	27,329
2018	93,694	46,600	11,724	31,295	33,230	4,647	11,418	4,193	296	26,590
2019	109,069	52,770	14,618	35,911	27,156	5,342	13,935	8,039	98	28,811
2020	89,061	48,653	6,710	39,162	30,955	5,120	18,841	6,251	202	19,949
2021	74,697	51,511	8,462	34,656	37,496	2,797	8,148	6,013	160	18,655
2022	94,095	44,983	11,411	49,775	15,208	1,778	11,204	4,816	266	20,478
% change[e]	26.0%	-12.7%	34.8%	43.6%	-59.4%	-36.4%	37.5%	-19.9%	66.3%	9.8%
ρ[f]	-0.200	-0.300	-0.500	0.700	-0.300	-0.700	-0.500	0.000	-0.100	-0.600
P	0.747	0.624	0.391	0.188	0.624	0.188	0.391	1.000	0.873	0.285

[a] Combines estimates from the Game Take and Furtaker surveys but does not include mentored youth harvest.
[b] Official estimates using Furtaker Survey data began in 2005-06.
[c] Estimates are minimum estimates that do not account for combination licenses.
[d] Estimates are minimum estimates that do not account for senior combination licenses.
[e] Percent change from 2021 to 2022.
[f] Spearman rho correlation coefficient from data collected from 2018–2022.

Table 7. Trapper and hunter-days, by species, Pennsylvania, 2011–2022.

Year	Raccoon	Red Fox	Gray Fox	Coyote[a]	Muskrat	Mink	Beaver	Skunk	Weasel	Opossum
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
2013	496,975	445,502	295,069	760,680	120,638	79,553	56,535	126,021	10,441	207,971
2014	605,431	517,322	280,812	654,710	153,955	110,109	48,460	110,922	36,688	192,439
2015	386,946	369,323	224,958	618,874	77,966	62,082	65,848	87,602	16,941	157,933
2016	338,815	334,740	191,015	526,827	64,980	73,013	36,096	87,701	15,055	127,381
2017	297,478	309,676	179,151	533,893	47,007	42,671	29,458	72,480	5,810	120,974
2018	259,429	280,234	149,568	548,388	41,380	35,853	32,863	41,581	7,901	96,525
2019	292,562	297,795	175,074	497,847	44,750	35,400	50,318	75,001	5,468	140,972
2020	266,489	290,447	130,382	497,611	41,065	40,080	61,264	67,111	6,279	99,222
2021	365,984	398,553	200,015	499,983	48,626	61,394	29,093	133,264	45,756	167,939
2022	355,332	343,373	189,785	721,743	48,492	25,506	65,414	71,674	11,323	134,639
% change[b]	-2.9%	-13.8%	-5.1%	44.4%	-0.3%	-58.5%	124.8%	-46.2%	-75.3%	-19.8%
ρ[c]	0.800	0.800	0.600	0.300	0.600	-0.100	0.400	0.500	0.600	0.500
P	0.104	0.104	0.285	0.624	0.285	0.873	0.505	0.391	0.285	0.391

[a] Combines estimates from Game Take Survey and Furtaker Survey, but does not include mentored youth data.

[b] Percent change from 2021 to 2022.

[c] Spearman rho correlation coefficient from data collected from 2018–2022.

Table 8. Trapnights, by species, Pennsylvania, 2011–2022.

Year	Raccoon	Red Fox	Gray Fox	Coyote	Muskrat	Mink	Beaver	Skunk	Weasel	Opossum
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
2013	5,452,366	4,001,064	3,025,750	2,283,318	2,046,237	988,938	279,180	1,838,158	84,398	2,996,779
2014	6,949,545	6,491,493	2,996,622	3,480,519	4,034,427	3,210,350	305,372	1,421,235	262,017	2,960,580
2015	3,827,802	3,841,077	2,333,542	3,232,886	1,350,908	986,187	322,362	1,250,551	100,764	2,142,796
2016	2,885,093	2,713,501	1,581,073	2,381,213	841,651	758,910	161,502	1,021,459	85,451	1,506,421
2017	2,572,318	3,068,868	2,014,701	2,721,939	582,145	415,384	135,711	1,129,536	41,996	1,528,342
2018	2,338,116	2,025,691	1,208,921	1,634,236	687,141	520,287	174,265	702,132	35,760	1,187,657
2019	3,301,568	3,104,293	3,211,153	2,738,159	654,528	503,397	326,813	1,630,773	27,161	1,983,283
2020	2,341,871	2,617,126	1,112,465	2,948,619	541,280	434,508	320,177	901,628	24,270	1,270,034
2021	2,636,699	2,490,647	1,343,471	2,200,208	564,237	517,427	166,110	821,494	462,259	1,583,133
2022	3,030,035	2,754,451	1,625,255	2,931,298	402,198	158,631	346,017	1,028,750	53,128	3,030,035
% change [a]	14.9%	10.6%	21.0%	33.2%	-28.7%	-69.3%	108.3%	25.2%	-88.5%	91.4%
ρ [b]	0.400	0.300	0.200	0.500	-0.900	-0.700	0.300	0.300	0.500	0.700
P	0.505	0.624	0.747	0.391	0.037	0.188	0.624	0.624	0.391	0.188

[a] Percent change from 2021 to 2022.

[b] Spearman rho correlation coefficient from data collected from 2018–2022.

Table 9. Harvest per 100 trapper and hunter-days, by species, Pennsylvania, 2011–2022.

Year	Raccoon	Red Fox	Gray Fox	Coyote[a]	Muskrat	Mink	Beaver	Skunk	Weasel	Opossum
2011	43.71	19.96	9.10	5.87	89.66	15.21	31.30	10.30	4.79	27.11
2012	45.23	16.83	7.49	6.33	82.42	14.40	21.43	8.37	9.50	39.00
2013	39.72	13.78	5.32	5.38	69.53	9.88	26.77	6.14	1.05	27.47
2014	33.58	10.76	7.75	4.84	75.18	13.20	36.33	12.59	1.01	30.99
2015	38.53	17.64	7.38	6.24	85.16	13.74	25.70	7.90	1.28	22.93
2016	27.16	14.17	5.61	4.90	66.85	10.68	21.85	6.99	1.85	17.68
2017	30.07	21.16	7.80	8.32	52.74	9.99	25.18	10.30	4.77	22.59
2018	36.12	16.63	7.84	5.71	80.30	12.96	34.74	10.08	3.75	27.55
2019	37.28	17.72	8.35	7.21	60.68	15.09	27.69	10.72	1.79	20.44
2020	33.42	16.75	5.15	7.87	75.38	12.77	30.75	9.31	3.22	20.11
2021	20.41	12.92	4.23	6.93	77.11	4.56	28.01	4.51	0.35	11.11
2022	26.48	13.10	6.01	6.90	31.36	6.97	17.13	6.72	2.35	15.21
% change[b]	18.2%	1.0%	34.6%	-0.4%	-60.7%	18.9%	-35.4%	23.7%	62.2%	20.4%
ρ[c]	-0.800	-0.600	-0.600	0.100	-0.600	-0.800	-0.700	-0.800	-0.500	-0.900
P	0.104	0.285	0.285	0.873	0.285	0.104	0.188	0.104	0.391	0.037

[a] Combines estimates from Game Take Survey and Furtaker Survey, but does not include mentored youth data.
[b] Percent change from 2021 to 2022.
[c] Spearman rho correlation coefficient from data collected from 2018–2022.

Table 10. Harvest per 100 trapnights (number of days × average number of traps), by species, Pennsylvania, 2011–2022.

Year	Raccoon[a]	Red Fox[a]	Gray Fox[a]	Coyote[a]	Muskrat	Mink	Beaver	Skunk	Weasel	Opossum
2011	3.33	1.72	0.66	0.47	5.71	1.32	5.02	0.65	0.61	1.96
2012	2.96	1.28	0.35	0.36	5.43	1.10	3.45	0.34	1.14	2.26
2013	2.71	1.23	0.31	0.35	4.10	0.79	5.42	0.42	0.13	1.91
2014	2.56	0.70	0.42	0.42	2.87	0.45	5.77	0.98	0.14	2.01
2015	3.18	1.36	0.41	0.53	4.91	0.86	5.25	0.55	0.21	1.69
2016	2.44	1.26	0.34	0.39	5.16	1.03	4.88	0.60	0.33	1.49
2017	2.61	1.65	0.36	0.42	4.26	1.03	5.47	0.66	0.66	1.79
2018	3.13	1.44	0.38	0.52	4.84	0.89	6.55	0.60	0.83	2.24
2019	2.70	1.19	0.23	0.56	4.15	1.06	4.26	0.49	0.36	1.45
2020	3.06	1.31	0.30	0.51	5.72	1.18	5.88	0.69	0.83	1.57
2021	2.14	1.36	0.25	0.51	6.65	0.54	4.91	0.73	0.03	1.18
2022	2.61	1.00	0.39	0.43	3.78	1.12	3.24	0.47	0.50	0.68
% change [b]	21.9%	-26.5%	55.0%	-15.2%	-43.1%	107.3%	-34.0%	-36.1%	1346.5%	-42.6%
ρ[c]	-0.800	-0.600	0.300	-0.800	-0.100	0.200	-0.700	-0.100	-0.300	-0.900
P	0.104	0.285	0.624	0.104	0.873	0.747	0.188	0.873	0.624	0.037

[a] Calculated using harvest data from trapping only.
[b] Percent change from 2021 to 2022.
[c] Spearman rho correlation coefficient from data collected from 2018–2022.

Table 11. Estimated number of resident junior license holders participating in junior hunts, Pennsylvania, 2006–2023.

Year	Spring Turkey	Pheasant	Squirrel	Rabbit
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	4,069	9,534	2,597
2014	12,758	6,741	8,881	2,614
2015	14,015	4,829	6,876	1,470
2016	12,503	3,610	6,602	1,506
2017	9,630	3,481	4,805	901
2018	6,154	1,535	4,159	1,189
2019	7,827	2,172	4,648	1,010
2020	12,347	1,712	–	862
2021	8,515	2,476	–	675
2022	5,144	2,431	–	654
2023[a]	12,047	–	–	–
% change[b]	134.2%	-1.8%	–	-3.1%
ρ[c]	0.000	0.800	–	-1.000
P	1.000	0.104	–	<0.001

[a] Starting in 2022–2023, data include junior resident license holders and mentored youth license holders.

[b] Percent change from 2021 to 2022 except spring turkey percent change is from 2022 to 2023.

[c] Spearman rho correlation coefficient from data collected from 2018–2022, and 2019–2023 for spring turkey.

Table 12. Estimated number of harvests during junior hunts, Pennsylvania, 2006–2023.

Year	Spring Turkey	Pheasant	Squirrel	Rabbit
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	5,816	11,785	2,527
2014	1,690	6,587	14,357	1,657
2015	2,025	5,816	13,147	617
2016	1,479	5,362	13,815	1,141
2017	2,288	4,054	10,033	795
2018	1,398	2,277	5,395	397
2019	1,628	3,385	8,235	707
2020	2,385	3,050	–	1,231
2021	1,237	3,263	–	563
2022	476	3,960	–	306
2023[a]	2,136	–	–	–
% change[b]	348.7%	21.4%	–	-45.6%
ρ [c]	-0.200	0.700	–	-0.300
P	0.747	0.188	–	0.624

[a] Starting in 2022–2023, data include junior resident license holders and mentored youth license holders.

[b] Percent change from 2021 to 2022 except spring turkey percent change is from 2022 to 2023.

[c] Spearman rho correlation coefficient from data collected from 2018–2022, and 2019–2023 for spring turkey.