

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

PROJECT CODE NO.: 06610

TITLE: Furbearer Research/Management

JOB CODE NO: 61001

TITLE: Furbearer Population and Harvest Monitoring

PERIOD COVERED: 1 July 2014 to 30 June 2015

WORK LOCATION(S): Statewide

PREPARED BY: Matthew J. Lovallo and Thomas S. Hardisky

DATE: 30 June 2015

ABSTRACT Annual Furtaker Survey and Wildlife Conservation Officer (WCO) Furbearer Questionnaire information has been used to determine trends in the number of furtakers and furbearer harvests since 1990 and monitor furbearer population relative abundance, distribution, nuisance levels, and harvest characteristics since 1995. Furtaker license sales increased steadily since 1999. During the 2014-2015 harvest season, 45,069 furtaker licenses were sold, the highest number recorded since 1985. The estimated statewide furtaker harvest increased for all furbearers except red foxes. Average pelt values decreased for all furbearer species except skunks. Pelt price decreases from 3-year averages were -84% for muskrats, -70% for mink, -62% for gray foxes, -61% for red foxes, -60% for raccoon, -51% for opossum, and -42% for beavers. Reports of bobcat sightings and incidental bobcat captures were comparable to previous years suggesting stabilization or slight declines in bobcat populations. Reports of fisher observations were similar to the previous year and continue to suggest that fisher populations are expanding rapidly proximal to initial release sites and throughout areas of the southcentral, southwest, and central regions. Otter populations remain stable throughout the state. In 2014, river otters occupied 87% of WCO districts. Coyote complaints and damage to livestock remained stable. Beaver damage and nuisance complaints were also stable. With 87% of WCO districts reporting increasing or stable beaver populations, the overall status appears secure in most areas. Nuisance raccoon, skunk, and fox complaints remained most common among WCOs during 2014. WCOs from western portions of Pennsylvania reported more porcupine absence than in past years.

OBJECTIVES

1. Determine trends in the annual harvest of furbearing animals and numbers of trappers.
2. Monitor changes in furbearer population distribution and abundance.

METHODS

Fur Harvest

The annual fur harvest was estimated from the Furtaker Survey conducted each April. Due to budget constraints, this survey was not conducted during 2004, but has been implemented in subsequent years. Harvest estimates were presented by species and Wildlife Management Unit (WMU). Combination license holders have been extended furtaker privileges since 1999, but harvest totals for each species did not include them during 1999-2010, representing a sampling bias (Boyd and Weaver 2010). Beginning with the 2011-12 season, junior combination license holders were included in calculating harvest totals. The fur harvest success of both junior and senior combination license holders were included in harvest estimates beginning in 2012 (Johnson et al. 2012).

Average pelt prices of furbearers sold at the Pennsylvania Trappers Association's District fur sales were obtained to monitor trends in pelt value. Pelt values were averaged each year among several districts reporting fur sale results. Approximately 5% of all furbearers harvested in Pennsylvania were sold at these fur sales. Pelt value trends since 1986 were assessed for each furbearer species.

The reported estimates of coyote harvest included only those animals recorded by furtakers and does not account for the incidental harvest recorded in the Game Take Survey. Johnson et al. (2012) provided the combined harvest totals.

Wildlife Conservation Officer Furbearer Questionnaire

Questionnaires were electronically mailed annually to all Wildlife Conservation Officers (WCOs) to collect a variety of furbearer information. Accidental captures and sightings of otter and fisher and numbers and types of coyote damage complaints during the previous calendar year were reported by WCOs via this survey. Numbers of beaver complaints received and assessments of beaver, otter, fisher, bobcat, and porcupine populations were also queried. In an effort to monitor the frequency of nuisance complaints of other furbearers, WCOs were asked to record numbers of bobcat, fisher, fox, weasel, river otter, mink, muskrat, raccoon, opossum, and skunk complaints. The 2014-2015 WCO Furbearer Questionnaire (Fig. 1) was distributed electronically on 27 May 2015. Survey data were scheduled for return from the Regional Wildlife Management Supervisors on 24 June 2015.

Although not considered a furbearer in Pennsylvania, porcupine status and distribution was assessed using the WCO Furbearer Questionnaire. Interest in monitoring porcupine populations stemmed from the 2011 regulation change allowing limited take of this species. Pre- and post-harvest population assessments were valuable in harvest management. Porcupine mortality along highways was measured by asking WCOs to categorize highway accident and shooting frequency within their districts.

Vehicle-caused mortalities and incidental trapping mortalities for bobcat, otter, and fisher were recorded annually by WCOs using standardized kill report forms. Mandatory WCO reporting of these mortalities was a year-round activity.

RESULTS

Fur Harvest

In 1985, a furtaker license was created with sales of an estimated 64,000 licenses. Furtaker license sales decreased during the late 1980s, fluctuated between 17,591 and 27,413 during 1990-2005, and steadily increased after 2005 (Table 1). Starting in 1999, combination license holders were extended furtaking privileges, which resulted in initial reduced furtaker license sales. Since 1999, the number of furtaker licenses sold increased steadily ($r=0.973$, $P<0.01$) (Table 1). During the 2014-2015 harvest season, 45,069 furtaker licenses were sold, the highest number recorded since 1985. Junior and senior combination license holders numbered 118,434. Variable local pelt values and international changes in fur demand continue to affect the number of furtakers in Pennsylvania.

The estimated statewide furtaker harvest increased for all furbearers except red foxes (Table 2). Three-year average harvests of mink and muskrats increased by about 10% (Table 2). Species harvest totals by WMU were provided for regional comparison of relative species abundance and harvest intensity (Table 3).

Historic low pelt values occurred during the 1989 and 1990 trapping seasons. Fur prices during the 1990s were relatively stable with the lowest values observed during the 1998-1999 season. The demand and prices paid for furs recently decreased sharply for nearly all furbearer species. Average pelt values decreased for all furbearer species during 2014-2015 except skunks (Table 4). Pelt price decreases from 3-year averages were -84% for muskrats, -70% for mink, -62% for gray foxes, -61% for red foxes, -60% for raccoon, -51% for opossum, and -42% for beavers. The skunk pelt price was 17% greater than the 3-year average.

During December 2010, the Pennsylvania Game Commission (PGC) implemented its first regulated fisher trapping season. This season was limited to 4 WMUs, 2C, 2D, 2E, and 2F. Furtakers were required to purchase a fisher permit prior to participating in the season and to report their harvest within 48 hours of trapping a fisher. Areas where fisher trapping was allowed expanded in 2012 with the addition of WMUs 2G and 4D, and again in 2013 with the addition of WMUs 2H, 3A, 3D, and 4E. During 2014, 6,637 fisher permits were purchased and 443 harvest reports were received. The harvest totals by WMU were 68 fisher from 1B, 57 from 2C, 76 from 2D, 34 from 2E, 40 from 2F, 25 from 2G, 15 from 2H, 13 from 3A, 10 from 3B, 18 from 3C, 28 from 3D, 24 from 4D, and 33 from 4E.

Population Monitoring

Bobcats.--The number of incidental bobcat captures, as estimated from the annual Furtaker Survey, has been steadily increasing since 1990. Greater than 500 incidental captures have been reported annually since 1995. The 3-year moving average of incidental captures was 2,886, increasing significantly during 1990-2014 ($r=0.91$, $P<0.05$) (Table 5). The number of incidental bobcat captures during 2014 was greater than the previous 2 years.

Since 2001, the PGC included questions concerning bobcat sightings on the annual Game Take Survey, which is sent to approximately 2% of general hunting license buyers each year (Boyd

and Weaver 2010). An annual sighting index (number of observations divided by effort X 100) has been developed to detect changes in observation rates (Table 6). Recent inconsistencies in methods used to calculate effort for this index will result in a review of the methodology used. No index was calculated for 2009-2014.

Based on results from the WCO furbearer questionnaire, bobcat populations continue to be well established. WCOs reported increasing or stable bobcat populations in 77% of districts (Fig. 2). Bobcats were absent in 20% of WCO districts in 1995, but were absent in only 9% of districts during 2014.

Fishers.--The number of incidental fisher captures reported on the furtakers survey has been increasing steadily during the past decade (Table 7). We estimate that 1,406 fishers were captured and released by Pennsylvania trappers during the 2014-2015 season. The annual number of fisher observations and incidental captures reported to WCOs maintained its trend upward since fishers were reintroduced in 1996 (Table 8). WCOs received 137 reports of fishers that were captured and released by licensed trappers and 929 reports of fisher observations. The geographic distribution of these reports suggests that fisher populations continue to rapidly expand from the reintroduction areas in northern regions and naturally expanding into regions of southwestern and southeastern Pennsylvania. In addition, 87% of WCOs surveyed during 2014 reported fisher populations existing within their districts, as compared to only 65% in 2004 (Fig. 3).

River Otters.--River otter populations continue to slowly expand throughout Pennsylvania. Numbers of incidental otter captures, primarily by beaver trappers, remained stable at 40-60 incidental captures during the past 10 years (Table 8). The majority of these captures occurred in the northeast region. Sustained otter populations continue to exist throughout the Susquehanna River drainage. Based on results of the 1995 WCO furbearer questionnaire, otters occurred in 49% of WCO districts. In 2014, otters occupied 87% of WCO districts (Fig. 4).

Since 2000, the annual hunting and trapping digest has provided trappers with additional information regarding the avoidance of otter while trapping beavers. Preliminary reports from WCOs indicate that trappers in high-density otter areas were using these techniques to avoid otter captures. Incidental otter capture reports totaled 40 during the 2014-15 trapping season. The average number of incidental otter captures during the previous 5 years was 49.

Coyotes.--Reports of coyote-caused damage to livestock and domestic pets have been relatively stable since 1993. Numbers of complaints and losses due to coyotes during 2014 were similar to reports from previous years. Complaints related to concerns for human safety were most common (54% of all complaints). Losses of calves, sheep and poultry were stable (Table 9). WCOs in 78 districts (58%) reported complaints during the most recent survey period. The majority of coyote complaints received by WCOs are people expressing concern primarily for human safety, but also for safety of pets, livestock, and wildlife.

Beavers.--The overall status of beaver populations appears secure in most areas, with 87% of WCO districts reporting increasing or stable populations in 2014 (Fig. 5). WCOs observed decreases in established populations within 3% of districts. Poorly-established populations comprised 9% of WCO districts during 2014. One WCO in Berks County reported beavers were

absent within his district. On a statewide basis, little change occurred to beaver populations from 2007 to 2014 (Fig. 5).

In 2014, beaver damage and nuisance complaints remained relatively low. Since 1996 when beaver complaints peaked at 1,140, reports of problem beavers gradually decreased. WCOs received 549 beaver complaints during 2014-2015. The northwest and northeast regions experienced slight increases in beaver complaints (Fig. 6). Beaver complaints have become more common in southeastern Pennsylvania. As the human population grows and beaver populations expand into more urban areas, the public may be less tolerant of beaver activity.

Other furbearers.--WCOs recorded the number of nuisance complaints received involving furbearer species other than coyotes and beavers. Raccoon, skunk, and fox complaints remained most common during 2014 (Table 10). Overall, furbearer complaint levels remained relatively stable. We will continue to monitor nuisance complaint levels of these furbearers in subsequent years.

Porcupines.--WCO survey responses established baseline information on porcupine population status and distribution. In 2014, porcupines remain absent from some portions of southwestern and southeastern Pennsylvania (Fig. 7). The northwest and southwest regions reported more porcupine absence in WCO districts than in past years. We will closely monitor porcupine populations in these areas.

Officers responded to 71 nuisance porcupine complaints, which was relatively unchanged from previous years. No porcupines or less than 1 per month were found dead along highways in 48% of WCO districts (Fig. 8). Some officers (21%) reported seeing 1 or more dead porcupines per week.

RECOMMENDATIONS

1. The fur harvest should continue to be reported by species and WMU to monitor area-specific harvest trends.
2. Pelt price information should be collected annually to monitor trends in fur value relative to regional harvest trends.
3. Current methods for monitoring changes in density and distribution of bobcat, otter, and fisher should be continued, and for otter, intensified to better understand population trends.
4. The Game Take Survey should continue to query general license buyers regarding bobcat, fisher, and coyote observations. Effects of geographic sampling bias should be assessed now that the Pennsylvania Automated License System is fully implemented.
5. The PGC should continue educational efforts concerning techniques for avoiding otter captures.
6. Increased numbers of coyote-related complaints should be addressed through

educational programs in rural and suburban communities.

7. Muskrat age ratio and reproductive information should be collected every 5 years to monitor fecundity and recruitment unless noticeable changes in population numbers occur. The next year of sampling should be 2017.

LITERATURE CITED

Boyd, R. C., and M. Weaver. 2010. Game Take and Furtaker Surveys. Annual Job Report 11101. Pennsylvania Game Commission. Harrisburg, USA.

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

Table 1. Number of furtaker licenses sold in Pennsylvania.

Year	Furtaker licenses sold	Combination licenses sold
1985	64,000	
1986	44,087	
1987	42,000	
1988	36,000	
1989	29,000	
1990	20,377	
1991	20,251	
1992	20,345	
1993	19,458	
1994	22,376	
1995	21,376	
1996	25,636	
1997	27,413	
1998	25,877	
1999	17,591 ^a	
2000	18,551 ^a	
2001	19,410 ^a	
2002	20,676 ^a	
2003	22,454 ^a	
2004	24,094 ^a	
2005	23,941 ^a	
2006	26,589 ^a	
2007	28,033 ^a	
2008	29,717 ^a	
2009	31,122 ^a	
2010	35,279 ^a	
2011	36,192 ^a	
2012	39,913	104,883
2013	44,591	112,875
2014	45,069	118,434

^a Combination license holders were extended furtaker privileges since 1999, but the number who pursue furbearers was not determined until the 2012 season. Therefore, prior to 2012, the number of licenses sold misrepresented to an unknown degree the number of furtakers in Pennsylvania.

Table 2. Annual harvest and percent change (% Δ) of 3-year moving average by species in Pennsylvania since 1990.

Year ^a	Raccoon	% Δ	Red Fox	% Δ	Gray Fox	% Δ	Coyote ^b	% Δ	Muskrat	% Δ	Mink	% Δ	Beaver ^c	% Δ	Skunk	% Δ	Opossum	% Δ	Weasel	% Δ
1990-91	116,443		32,699		21,683		1,810		112,358		7,053		3,431		9,298		36,574		798	
1991-92	130,608		28,495		30,409		3,719		156,014		10,355		4,107		8,907		37,177		481	
1992-93	124,404		27,611		25,395		4,402		135,533		9,157		4,506		7,221		27,754		343	
1993-94	118,964	0.7	25,862	-7.7	23,839	2.8	6,161	43.8	121,657	2.3	7,808	2.8	3,606	1.5	7,920	-5.4	25,807	-10.6	526	-16.8
1994-95	186,551	15.0	30,649	2.6	33,387	3.7	6,240	17.7	178,145	5.4	10,208	-0.5	9,360	43.0	12,620	15.4	29,621	-8.3	723	17.9
1995-96	120,462	-0.9	31,110	4.2	23,518	-2.3	6,662	13.4	130,442	-1.2	8,602	-2.0	6,454	11.1	9,995	10.0	29,688	2.3	687	21.6
1996-97	214,958	22.5	29,623	4.3	23,307	-0.7	7,959	9.4	146,013	5.7	9,315	5.7	9,789	31.8	11,571	12.0	48,549	26.7	589	3.3
1997-98	194,696	1.6	36,923	6.9	26,043	-9.2	6,685	2.1	216,066	8.3	14,063	13.7	12,628	12.8	12,344	-0.8	60,717	28.8	1,172	22.5
1998-99	195,110	14.1	47,202	16.5	32,922	12.9	11,652	23.4	148,205	3.6	12,238	11.4	8,727	7.9	11,190	3.5	56,287	19.1	662	-1.0
1999-00	107,407	-17.8	36,860	6.4	26,794	4.2	9,508	5.9	94,215	-10.2	13,774	12.5	8,377	-4.5	6,723	-13.8	33,723	-9.0	429	-6.6
2000-01	108,890	-17.3	33,060	-3.2	24,452	-1.9	10,383	13.3	79,880	-29.7	8,614	-13.6	8,408	-14.2	7,534	-15.9	29,093	-21.0	340	-36.8
2001-02	121,810	-17.8	33,003	-12.1	23,275	-11.5	12,363	2.3	121,994	-8.1	13,214	2.8	10,934	8.7	9,245	-7.6	27,192	-24.4	657	-0.3
2002-03	106,485	-0.3	33,007	-3.7	18,805	-10.7	11,444	6.0	75,340	-6.4	10,069	-10.4	4,538	-13.8	7,207	2.1	34,787	1.2	406	-1.6
2003-04	104,781	-1.2	31,592	-1.5	15,956	-12.8	11,697	3.8	71,368	-3.1	6,494	-6.6	7,874	-2.2	9,319	7.4	33,760	5.1	359	1.4
2005-06	106,082	-4.7	40,551	7.7	17,616	-9.8	9,670	-7.6	70,995	-19.0	9,335	-13.0	14,283	14.3	9,997	2.9	43,770	17.3	567	-6.3
2006-07	138,640	10.1	45,512	11.9	20,754	3.7	11,879	1.3	121,167	21.1	12,680	10.1	14,210	36.2	10,687	13.1	48,102	11.9	487	6.1
2007-08	121,466	4.8	52,000	17.3	18,613	4.9	13,360	5.0	121,446	19.0	10,004	12.3	11,542	10.1	9,818	1.7	41,168	5.9	440	5.7
2008-09	142,808	10.0	44,745	3.0	20,845	5.7	12,776	8.9	74,059	1.0	8,632	-2.2	9,942	-10.8	12,331	7.7	54,273	7.9	504	-4.2
2009-10	112,550	-6.5	37,418	-5.7	13,793	-11.6	13,438	4.1	63,988	-18.1	7,261	-17.3	9,704	-12.6	8,314	-7.2	37,270	-7.5	468	-1.3
2010-11	125,423	1.1	54,661	2.0	15,691	-5.5	14,732	3.5	58,296	-24.3	8,204	-7.0	9,254	-7.3	8,935	-2.9	36,188	-3.8	436	-0.3
2011-12	174,858	8.4	68,214	17.2	19,380	-2.9	15,924	7.7	89,274	7.7	11,855	13.4	18,212	28.6	13,057	2.5	49,626	-3.6	652	10.5
2012-13	210,146	23.6	67,465	18.7	17,415	7.4	19,470	13.7	93,153	13.8	12,454	19.0	9,712	0.0	7,329	-3.3	78,024	33.1	604	8.7
2013-14	197,380	14.1	61,392	3.5	15,700	0.0	16,256	3.0	83,880	10.6	7,856	-1.1	15,134	15.8	7,733	-4.1	57,138	12.8	110	-19.3
2014-15	203,311	4.9	55,659	-6.4	21,765	4.5	21,149	10.1	115,742	9.9	14,532	8.3	17,607	-1.4	13,969	3.2	59,643	5.4	372	-20.5

^a Furtaker survey was not conducted during the 2004-2005 season.

^b Coyote harvest is calculated from only the Furtaker Survey and does not include coyote harvests from the Game Take Survey.

^c Beaver harvest was based on mandatory pelt tagging totals until 2004. Harvest was estimated from furtaker surveys beginning with the 2005-2006 season.

Table 3. Estimated harvests of furbearers by WMU during the 2014-2015 hunting and trapping seasons.

WMU	Raccoon	Red Fox	Gray Fox	Coyote ^a	Muskrat	Mink	Beaver	Skunk	Opossum	Weasel
1A	16,151	1,898	199	1,250	14,780	509	2,111	224	3,040	29
1B	12,766	1,106	272	647	18,879	1,399	3,987	567	2,050	20
2A	10,337	1,038	199	1,968	5,440	572	415	239	4,552	20
2B	26,063	655	598	1,092	4,500	334	271	179	1,703	10
2C	9,335	2,198	1,051	1,451	6,226	445	505	283	2,519	39
2D	17,790	1,884	2,012	891	8,076	874	1,642	388	3,318	10
2E	5,419	792	1,305	618	3,283	588	433	179	1,442	0
2F	3,886	369	816	833	570	207	1,407	15	1,112	39
2G	3,901	1,461	1,993	1,580	1,711	318	505	537	1,807	10
2H	1,032	177	1,214	546	200	207	162	104	486	0
3A	6,208	1,911	1,269	963	5,564	1,272	758	343	2,224	10
3B	6,679	1,693	1,830	1,796	2,142	509	1,010	253	3,370	0
3C	4,584	1,693	1,522	2,256	3,190	715	1,912	268	1,668	29
3D	3,628	1,119	290	776	709	143	397	149	1,303	69
4A	4,614	710	652	862	878	191	108	104	434	0
4B	6,239	805	344	172	2,697	1,479	216	253	1,581	20
4C	3,856	2,116	326	287	308	334	144	343	1,286	20
4D	7,499	1,870	2,592	1,106	4,993	541	216	477	2,224	49
4E	10,200	4,683	1,830	704	6,196	1,240	289	835	4,065	0
5A	5,616	5,993	254	187	10,680	811	126	388	1,633	0
5B	12,356	8,123	127	144	8,122	843	108	1,118	3,857	0
5C	11,324	10,840	362	460	2,820	382	126	224	1,042	0
5D	1,260	1,570	0	14	15	64	469	45	104	0
Unknown	12,568	956	707	546	3,760	556	289	6,455	12,822	0
Total	203,311	55,660	21,764	21,149	115,739	14,533	17,606	13,970	59,642	374

^a Coyote harvest is calculated from only the Furtaker Survey and does not include coyote harvests from the Game Take Survey.

Table 4. Average pelt prices paid for furbearer species in Pennsylvania.

Trapping season	Average pelt price (\$)ª										
	Raccoon	Red Fox	Gray Fox	Coyote	Muskrat	Mink	Beaver	Skunk	Opossum	Bobcat	Fisher
1986-87	19.89	29.15	33.76	31.57	4.84	24.19	33.00	1.00	3.05		
1987-88	9.78	17.20	31.93	13.50	5.36	31.11	22.60		1.99		
1988-89	5.29	15.97	11.58	19.00	2.91	29.45	20.22		1.28		
1989-90	3.40	9.30	8.79	11.60	1.42	22.29	17.77	1.92	1.11		
1990-91	3.35	8.83	8.43	10.01	1.61	19.06	9.71	1.00	0.96		
1991-92	7.12	13.55	12.78	18.37	2.95	26.23	13.14	2.25	2.17		
1992-93	6.77	12.96	11.32	25.40	2.25	19.95	10.63		1.71		
1993-94	8.54	15.44	11.02	24.15	2.88	18.35	19.03	2.66	1.88		
1994-95	9.15	18.73	11.47	24.70	3.09	14.08	19.94	2.21	1.51		
1995-96	10.27	16.30	9.40	13.36	3.15	11.88	19.65	3.00	1.74		
1996-97	15.34	18.05	11.94	20.68	6.03	19.06	29.37	3.92	1.83		
1997-98	12.07	13.18	9.65	9.72	3.44	11.66	21.73		1.41		
1998-99	6.87	9.73	4.84	6.40	1.87	9.48	15.29		0.49		
1999-00	4.94	10.72	6.19	15.43	3.16	9.75	16.08		1.47		
2000-01	7.42	16.58	8.61	16.07	3.40	9.64	20.00		2.47		
2001-02	8.34	20.14	10.05	17.16	3.85	8.47	15.86		1.54		
2002-03	9.39	22.84	12.81	22.57	3.81	9.69	14.33		2.12		
2003-04	10.15	19.92	18.74	25.29	3.33	10.50	15.84		2.03		
2005-06	10.11	16.48	18.04	9.37	2.89	12.84	16.11	3.14	2.51		
2006-07	17.50	20.36	26.54	24.50	6.10	17.42	17.18	4.50	5.05		
2007-08	12.88	20.84	43.84	20.02	3.20	12.88	22.14	4.04	2.45		
2008-09	9.79	11.58	25.11	12.37	3.96	10.06	18.05	4.42	3.45	26.36	
2009-10	11.58	10.48	20.76	17.27	7.35	11.02	18.29	4.62	2.62	43.50	
2010-11	12.38	14.63	19.59	18.40	6.92	13.95	14.90	3.62	1.99	36.83	41.60
2011-12	12.81	23.48	23.87	15.52	11.00	19.48	21.36	3.30	2.26	46.52	36.42
2012-13	15.14	41.34	29.65	20.62	13.38	24.86	22.32	3.05	3.23	76.12	84.00
2013-14	14.67	38.07	25.98	23.15	12.56	18.89	21.26	3.36	4.09	81.72	74.00
2014-15	7.83	20.80	14.46	18.82	5.74	10.71	13.32	4.28	2.08	60.64	51.00

^aAverage pelt prices paid at PA Trappers Association fur sales. Weasel pelt prices were excluded due to small sample sizes.

Table 5. Numbers of incidental bobcat captures as estimated from the annual Furtaker Survey. This survey was not conducted during 2004-2005.

Trapping season	No. survey respondents	No. furtaker licenses	No. bobcats^a captured and released	Extrapolated no. bobcat captures	3-year moving average^b (no. bobcat captures)
1990-1991	2,302	20,377	40	354	
1991-1992	2,361	20,215	24	205	
1992-1993	1,652	20,345	26	320	293
1993-1994	2,175	19,246	16	142	222
1994-1995	2,056	21,905	101	1,076	513
1995-1996	2,181	21,840	46	460	559
1996-1997	2,363	25,636	62	673	736
1997-1998	2,233	27,413	46	565	566
1998-1999	2,466	25,877	108	1,133	790
1999-2000	1,557	17,414	62	693	797
2000-2001	1,681	18,551	52	574	991
2001-2002	1,553	19,410	56	700	656
2002-2003	1,779	20,676	45	523	599
2003-2004	2,204	22,454	68	693	639
2005-2006	2,412	23,941	165	1,638	951
2006-2007	2,436	26,589	175	1,910	1,414
2007-2008	2,994	28,033	235	2,200	1,916
2008-2009	2,622	29,717	274	3,105	2,405
2009-2010	3,186	31,122	235	2,295	2,533
2010-2011	4,421	35,279	221	1,763	2,388
2011-2012	4,080	36,192	212	2,259	2,106
2012-2013	3,223	39,913	105	1,928	1,983
2013-2014	4,439	44,591	175	2,016	2,068
2014-2015	4,720	45,069	189	4,714	2,886

^a Does not include bobcats legally harvested by permit holders.

^b $r = 0.91$, $P < 0.05$

Table 6. Reports of bobcat and fisher sightings by county from the annual Game Take Survey, 2001-2009. Furtaker Survey was not conducted in 2004. Estimate was not conducted since 2008.

Year	Season	N (%)	Effort days	Bobcat		Fisher	
				Number	SI ^a	Number	SI ^a
2001	Spring Turkey Hunters	2,785 (24.8)	12,735	200	1.57	90	0.71
	Firearms Deer Hunters	8,628 (76.9)	40,254	585	1.45	152	0.38
	Archery Deer Hunters	3,237 (28.8)	36,439	407	1.12	134	0.37
	All Hunters	11,221 (100.0)	89,428	1,192	1.33	376	0.42
2002	Spring Turkey Hunters	2,423 (24.8)	10,952	205	1.87	43	0.39
	Firearms Deer Hunters	7,176 (73.3)	33,412	465	1.39	170	0.51
	Archery Deer Hunters	2,816 (28.8)	31,396	266	0.85	95	0.3
	All Hunters	9,777 (100.0)	75,760	936	1.24	308	0.41
2003 ^b	Spring Turkey Hunters	2,728 (27.3)	12,147	131	1.08	49	0.4
	Firearms Deer Hunters	7,388 (73.8)	34,133	367	1.08	95	0.28
	Archery Deer Hunters	2,923 (29.2)	27,137	265	0.97	63	0.23
	All Hunters	10,005 (100.0)	73,417	763	1.04	207	0.28
2005	Spring Turkey Hunters	2,845 (21.7)	12,327	163	1.32	104	0.84
	Firearms Deer Hunters	7,213 (55.0)	35,011	316	0.9	107	0.31
	Archery Deer Hunters	3,065 (23.4)	28,674	442	1.54	125	0.44
	All Hunters	13,123 (100.0)	76,012	921	1.21	336	0.44
2006	Spring Turkey Hunters	2,580 (20.7)	10,243	481	4.7	121	1.18
	Firearms Deer Hunters	6,865 (55.0)	32,609	707	2.17	230	0.71
	Archery Deer Hunters	3,025 (24.3)	32,065	109	0.34	109	0.34
	All Hunters	12,470 (100.0)	74,917	1,297	1.73	460	0.61
2007	Spring Turkey Hunters	2,369 (25.2)	9,467	316	3.33	70	0.73
	Firearms Deer Hunters	5,736 (60.9)	57,500	784	1.36	270	0.46
	Archery Deer Hunters	2,832 (30.0)	13,445	385	2.86	171	1.27
	All Hunters	9,415 (100.0)	80,412	1,485	1.84	511	0.63
2008	Spring Turkey Hunters	4,498 (20.2)	9,676	270	2.79	111	1.15
	Firearms Deer Hunters	12,350 (55.5)	29,739	502	1.69	224	0.75
	Archery Deer Hunters	5,412 (24.3)	29,478	348	1.18	116	0.39
	All Hunters	8,478 (100.0)	68,893	1,120	1.63	451	0.65

^a SI = Sighting Index = observations/effort * 100

Table 7. Numbers of incidental fisher captures estimated from the annual Furtaker Survey. This survey was not conducted during 2004-2005.

Trapping season	No. survey respondents	No. furtaker licenses	No. fisher captured and released	Extrapolated no. fisher captures	3-year moving average (no. fisher captures) ^a
1999-2000	1,557	17,414	5	56	
2000-2001	1,681	18,551	1	11	
2001-2002	1,553	19,410	6	75	47
2002-2003	1,779	20,676	11	128	71
2003-2004	2,204	22,454	10	102	102
2005-2006	2,412	23,941	83	824	351
2006-2007	2,436	26,589	87	950	625
2007-2008	2,994	28,033	105	983	919
2008-2009	2,622	29,717	167	1,893	1,275
2009-2010	3,186	31,122	120	1,171	1,349
2010-2011	4,421	35,279	117	933	1,332
2011-2012	4,080	36,192	163	1,632	1,245
2012-2013	3,223	39,913	118	1,644	1,403
2013-2014	4,439	44,591	104	1,257	1,511
2014-2015	4,720	45,069	92	1,406	1,436

^a $r = 0.95$, $P < 0.01$

Table 8. Reports of otter and fisher captures and fisher observations estimated from annual WCO questionnaires.

Survey Season	No. Districts Reporting	No. Incidental Otter Captures	No. Incidental Fisher Captures	No. Reported Fisher Observations
1995	123	15	-	-
1996	123	15	-	-
1997	123	31	10	60
1998	123	26	9	67
1999	127	30	6	94
2000	123	35	8	82
2001	137	25	6	105
2002	122	27	9	106
2003	133	26	20	206
2004	122	42	31	303
2005	123	50	49	341
2006	118	44	86	385
2007	133	57	132	481
2008	132	47	138	561
2009	125	36	106	615
2010	125	51	101	653
2011	131	59	130	837
2012	131	53	113	808
2013	132	45	94	999
2014	137	40	137	929

Table 9. Types and numbers of coyote-related complaints reported to WCOs.

	Survey Period									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Proportion of WCO districts reporting coyote complaints (%)	66	64	44	54	62	50	59	61	58	58
Complaint nature/ species affected										
Cattle	18	24	9	12	12	11	13	13	17	16
Sheep	43	29	19	22	29	20	19	26	23	23
Goats	5	3	4	7	4	5	4	8	5	5
Poultry	24	11	19	16	14	21	24	25	20	35
Dogs	12	19	8	9	17	8	12	9	5	15
Cats	25	38	28	19	25	29	27	24	17	25
Afraid of Coyotes	263	199	155	171	219	193	258	229	221	249
Deer	73	36	61	74	39	53	53	65	37	50
Turkeys	31	12	12	21	17	14	23	18	15	17
Other	32	36	36	32	17	31	48	18	33	26
Total Complaints	526	407	351	383	393	385	481	435	393	461
Coyote-caused mortalities										
Cows	2	0	1	1	0	1	0	0	2	2
Calves	10	27	7	9	8	7	7	10	12	11
Sheep	30	47	28	47	57	25	22	49	41	44
Goats	0	2	3	4	3	4	5	6	5	3
Poultry	51	71	93	132	76	97	68	106	77	68
Dogs	3	3	1	2	1	1	7	3	0	4
Cats	16	33	15	34	19	18	53	28	25	23
Rabbits	8	12	2	8	16	6	7	5	7	22
Deer	13	10	8	10	7	6	8	6	11	18
Other	2	1	1	0	1	0	1	0	1	0
Total Depredation	135	206	159	247	188	165	178	213	181	195

Table 10. Frequency of furbearer complaints received by Wildlife Conservation Officers.

Species	2009	2010	2011	2012	2013	2014
Bobcat	50	37	52	75	63	62
Fisher	23	14	32	52	44	36
Fox	235	219	261	301	257	267
Weasel	17	12	22	20	26	20
River Otter	7	10	19	10	18	11
Mink	27	10	24	13	21	26
Muskrat	73	126	68	73	61	58
Raccoon	763	960	820	942	837	761
Opossum	139	121	97	117	90	74
Skunk	488	510	426	471	326	272
Coyote	393	386	481	435	393	461
Beaver	506	521	567	454	488	549

2014-2015 Furbearer Questionnaire	
<p>All questions pertain to furbearer information within your district during May 2014 to April 2015. If you are new to this district or cannot answer these questions, please electronically submit this form anyway (leaving unknown answers blank) or forward it to the WCO who previously occupied or covered your district. Please do not answer "many" or "a lot" to questions asking "How many?" Give us your best estimates. Please note that these types of questions will be asked annually.</p>	
<p>Navigating: Click on the blue boxes to enter text or numbers. Click on the option circles (O) to select your response. To advance, click on the next entry field.</p>	
<p>District No. <input style="width: 100px;" type="text"/></p> <p style="font-size: small;">(enter district number without hyphens; hyphens will automatically be inserted)</p>	<p>WCO Name <input style="width: 150px;" type="text"/></p>
<p>Beavers</p> <p>1. How many beaver complaints were serviced within each WMU in your district? →</p> <p>2. How many problem beavers did you trap and transfer to a new location? <input style="width: 60px;" type="text"/></p> <p>3. How many problem beavers did you dispatch/euthanize? <input style="width: 60px;" type="text"/></p> <p>4. How would you describe beaver populations in your district?</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Beaver populations are present each year and are ...</i></p> <p>----- <i>OR</i> -----</p> <p><i>Beaver populations are <u>not</u> present each year and are ...</i></p> </div> <div style="width: 50%; border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> increasing <input type="radio"/> decreasing <input type="radio"/> stable </div> <hr style="border: 0; border-top: 1px dashed black;"/> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> poorly established <input type="radio"/> absent </div> </div> </div>	
<p>River Otters</p> <p>5. How many river otters were accidentally caught by trappers within your district? <input style="width: 60px;" type="text"/></p> <p>6. How would you describe river otter populations in your district?</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Otter populations are present each year and are ...</i></p> <p>----- <i>OR</i> -----</p> <p><i>Otter populations are <u>not</u> present each year and are ...</i></p> </div> <div style="width: 50%; border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> increasing <input type="radio"/> decreasing <input type="radio"/> stable </div> <hr style="border: 0; border-top: 1px dashed black;"/> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> poorly established <input type="radio"/> absent </div> </div> </div>	
<p>Fishers</p> <p>7. How many reliable reports of fishers have you received in your district? <input style="width: 60px;" type="text"/></p> <p>8. How many fishers were accidentally caught by trappers in your district? <input style="width: 60px;" type="text"/></p> <p>9. How would you describe fisher populations in your district?</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Fisher populations are present each year and are ...</i></p> <p>----- <i>OR</i> -----</p> <p><i>Fisher populations are <u>not</u> present each year and are ...</i></p> </div> <div style="width: 50%; border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> increasing <input type="radio"/> decreasing <input type="radio"/> stable </div> <hr style="border: 0; border-top: 1px dashed black;"/> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> poorly established <input type="radio"/> absent </div> </div> </div>	
<p>Bobcats</p> <p>10. How would you describe bobcat populations in your district?</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Bobcat populations are present each year and are ...</i></p> <p>----- <i>OR</i> -----</p> <p><i>Bobcat populations are <u>not</u> present each year and are ...</i></p> </div> <div style="width: 50%; border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> increasing <input type="radio"/> decreasing <input type="radio"/> stable </div> <hr style="border: 0; border-top: 1px dashed black;"/> <div style="display: flex; justify-content: space-around;"> <input type="radio"/> poorly established <input type="radio"/> absent </div> </div> </div>	

Figure 1. Wildlife Conservation Officer furbearer questionnaire used for the 2014-15 survey period (page 1).

Coyotes

11. Did you receive any coyote-related complaints during this period? ☐ Yes ☐ No

If you received coyote complaints, please record the type and number of complaints and animals killed.
Omit any complaints that the Bureau of Dog Law Enforcement (PA Dept of Agriculture) serviced.

Number of Coyote Complaints:	Number of Animals Killed by Coyotes:
<input type="text"/> Cattle	<input type="text"/> Cows
<input type="text"/> Sheep	<input type="text"/> Calves
<input type="text"/> Goats	<input type="text"/> Sheep/Lambs
<input type="text"/> Poultry/Waterfowl	<input type="text"/> Goats
<input type="text"/> Attacked Dogs	<input type="text"/> Poultry/Waterfowl
<input type="text"/> Attacked Cats	<input type="text"/> Dogs
<input type="text"/> Afraid of Coyotes	<input type="text"/> Cats
<input type="text"/> Chased/Attacked Deer	<input type="text"/> Rabbits
<input type="text"/> Chased/Attacked Wild Turkey	<input type="text"/> Deer
<input type="text"/> Other ... <input type="text"/>	<input type="text"/> Other ... <input type="text"/>

Nuisance Complaints

12. If you received nuisance complaints concerning other furbearer species, how many occurred in your district?

<input type="text"/> Bobcat	<input type="text"/> Muskrat
<input type="text"/> Fisher	<input type="text"/> Raccoon
<input type="text"/> Fox	<input type="text"/> Opossum
<input type="text"/> Weasel	<input type="text"/> Skunk
<input type="text"/> River Otter	<input type="text"/> Other ... <input type="text"/>
<input type="text"/> Mink	

Other Mammals - Porcupines

13. How many porcupine complaints did you receive in your district during the past year?

14. Excluding the winter months, approximately how many dead porcupines did you see on average along roadways within your district?
(unique/individual porcupines, not counted more than once)

☐ none
☐ less than one each month
☐ 1-3 each month
☐ 1-6 each week
☐ one or more each day

15. How would you describe porcupine populations in your district?

Porcupine populations are present each year and are ... ☐ increasing ☐ decreasing ☐ stable

----- or -----

Porcupine populations are not present each year and are ☐ poorly established ☐ absent

Thank you for your cooperation and assistance!
Please return this questionnaire to your regional wildlife management supervisor
and other appropriate supervisors as an email attachment.

Figure 1 (cont.). Wildlife Conservation Officer furbearer questionnaire used for the 2014-15 survey period (page 2).

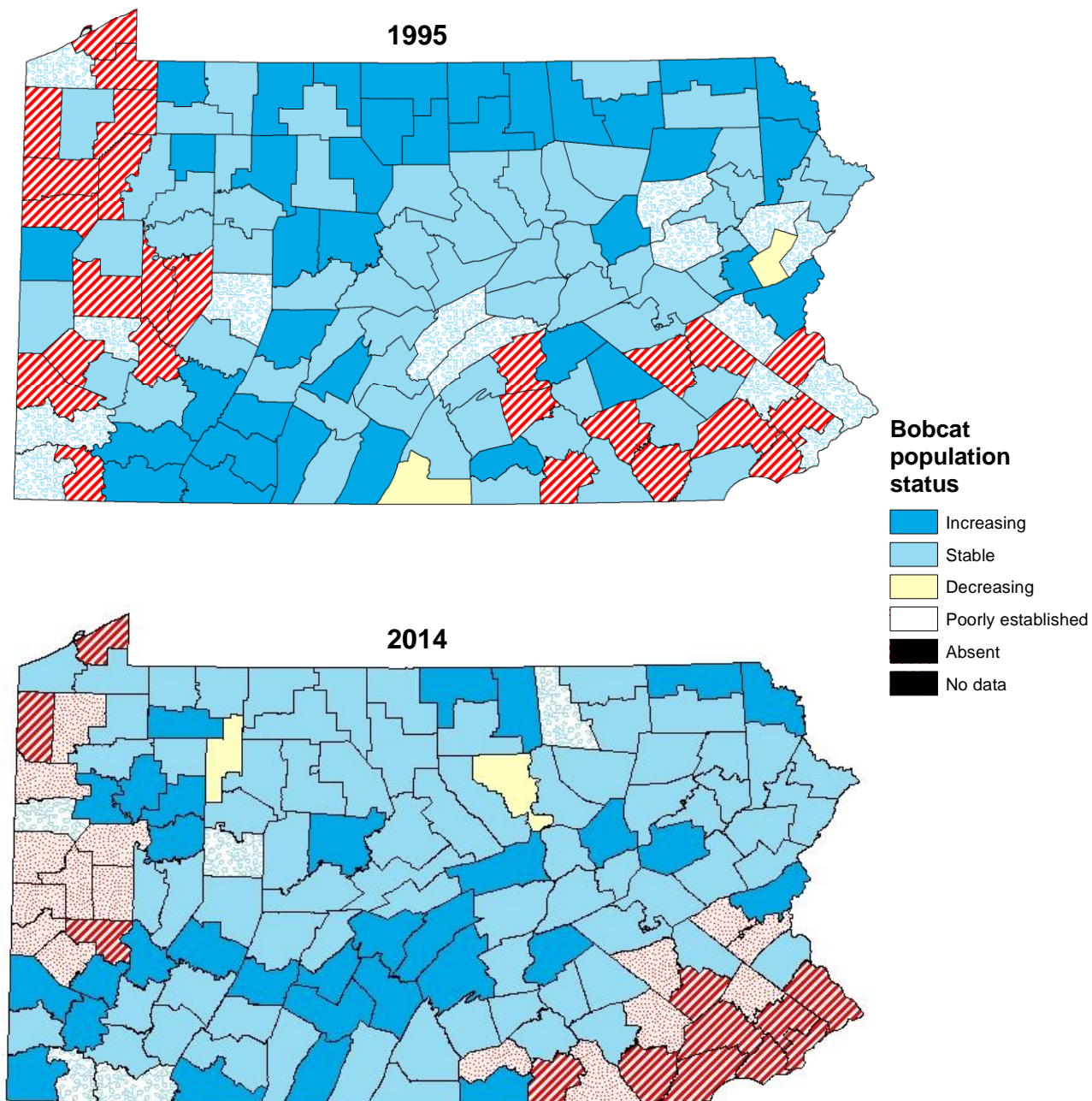


Figure 2. Bobcat population status and distribution based on Wildlife Conservation Officer observations during 1995 and 2014.

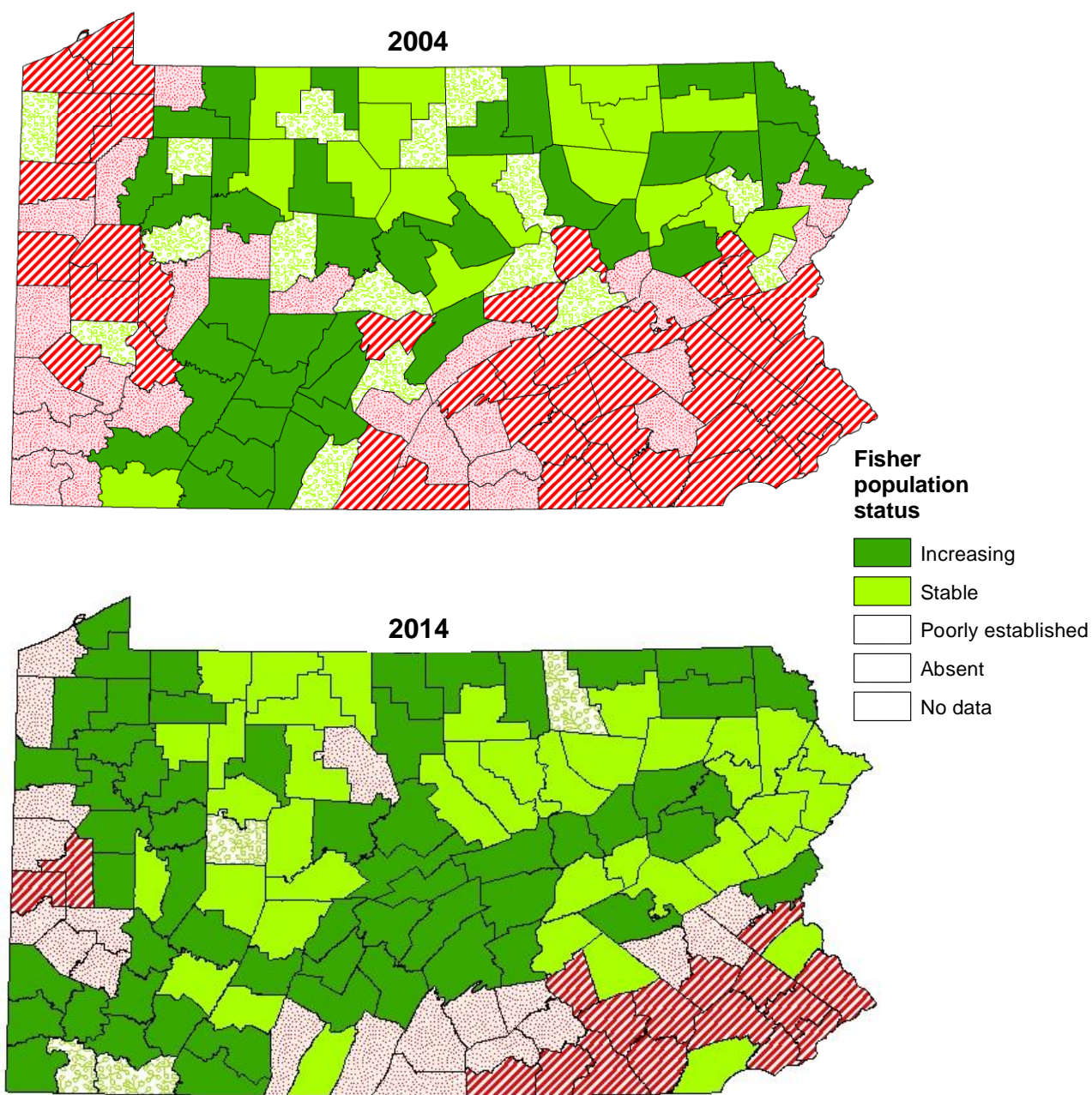


Figure 3. Fisher population status based on Wildlife Conservation Officer observations during 2004 and 2014.

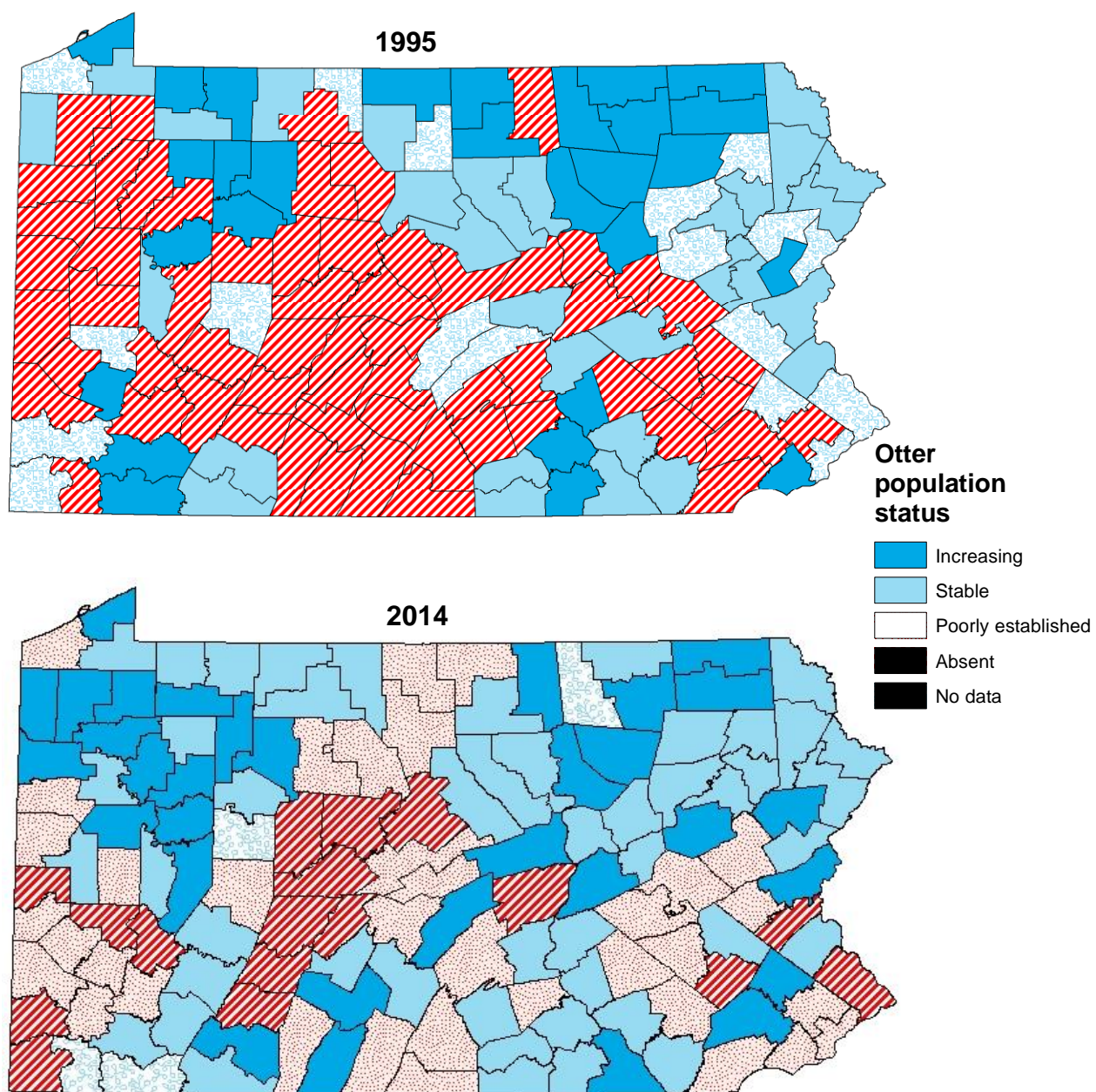


Figure 4. River otter population status based on Wildlife Conservation Officer observations during 1995 and 2014.

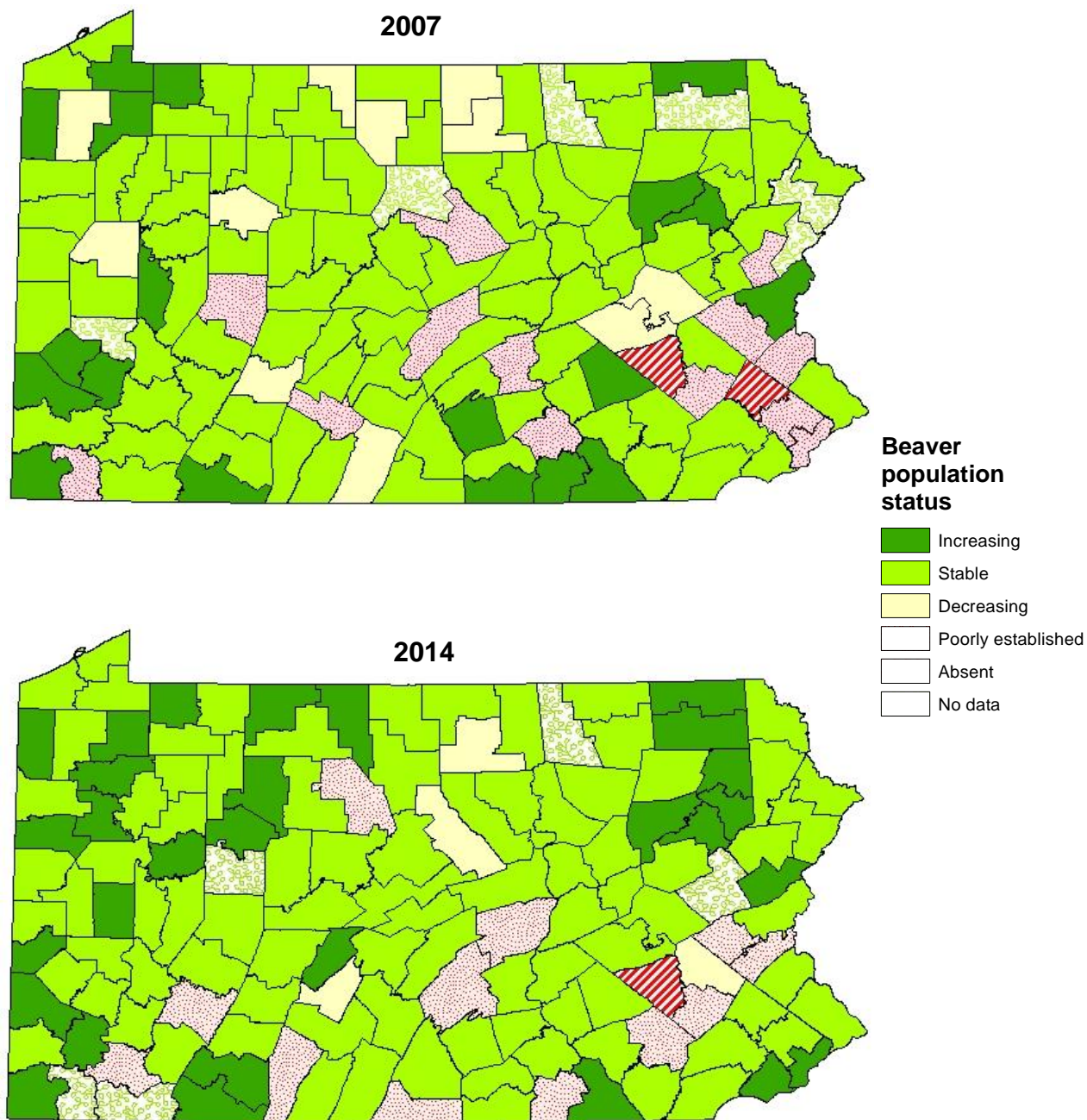


Figure 5. Beaver population status based on Wildlife Conservation Officer observations during 2007 and 2014.

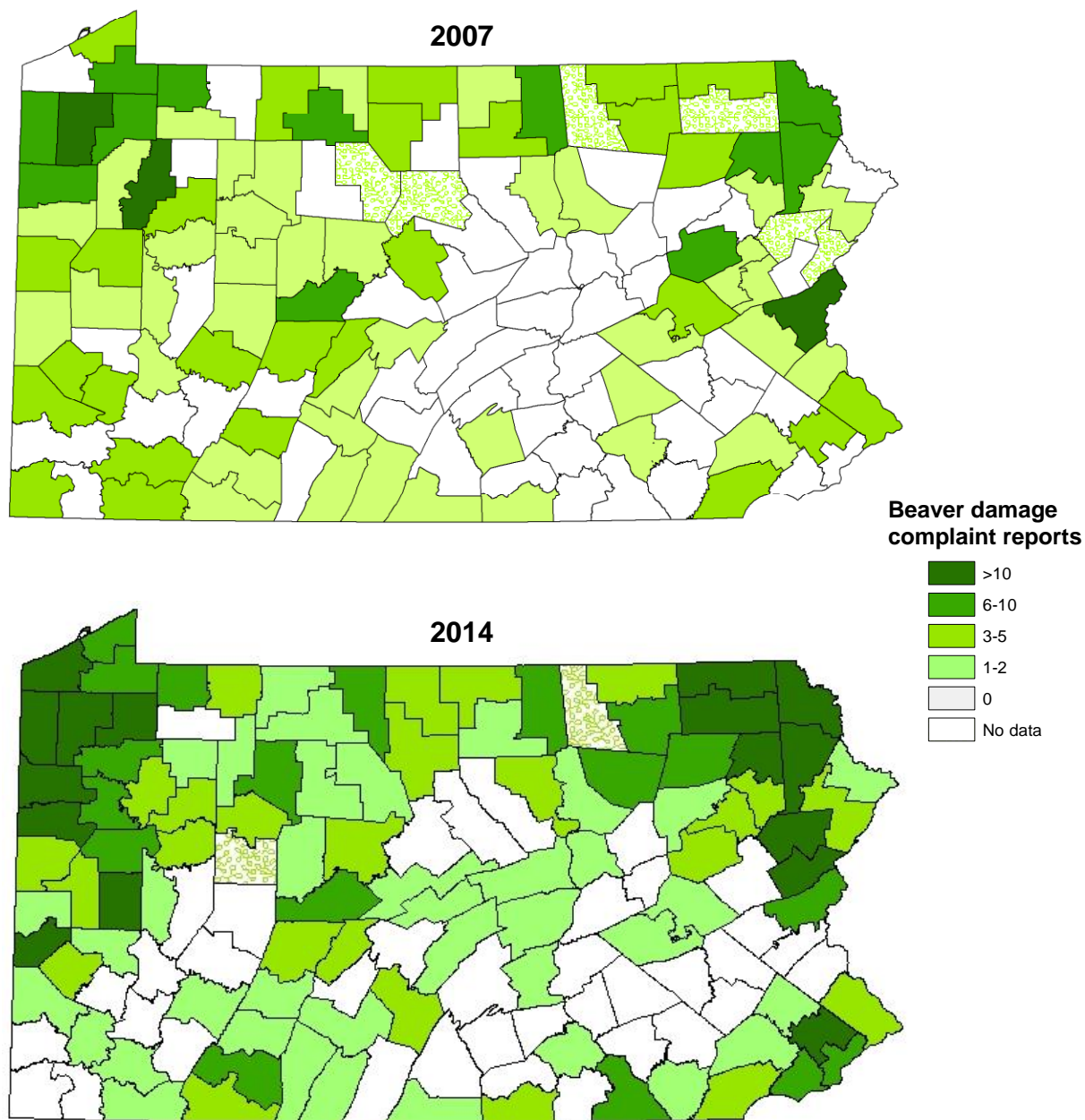


Figure 6. Distribution and frequency of beaver complaints reported to Wildlife Conservation Officers during 2007 and 2014.

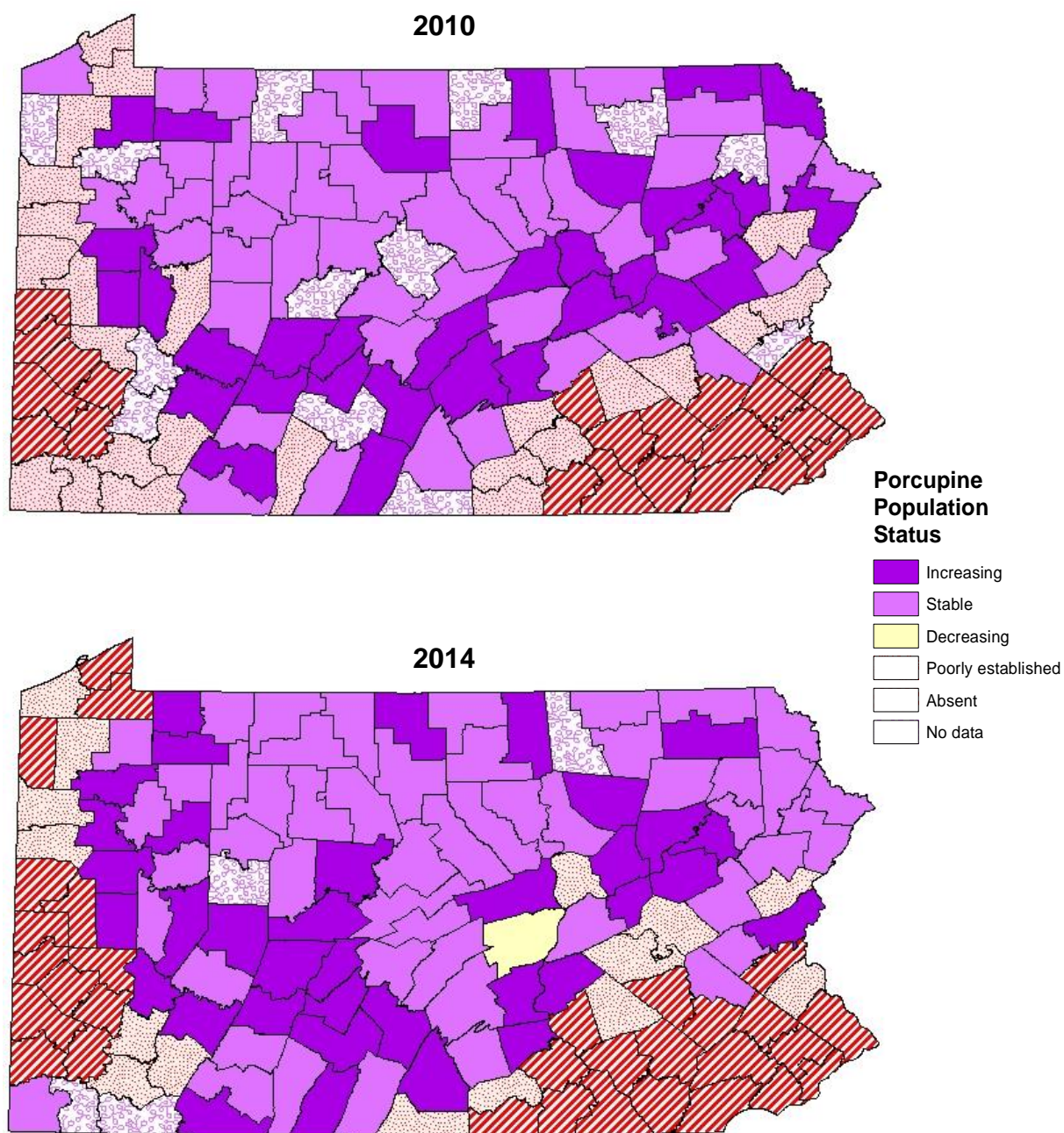


Figure 7. Porcupine population status based on Wildlife Conservation Officer observations during 2010 and 2014.

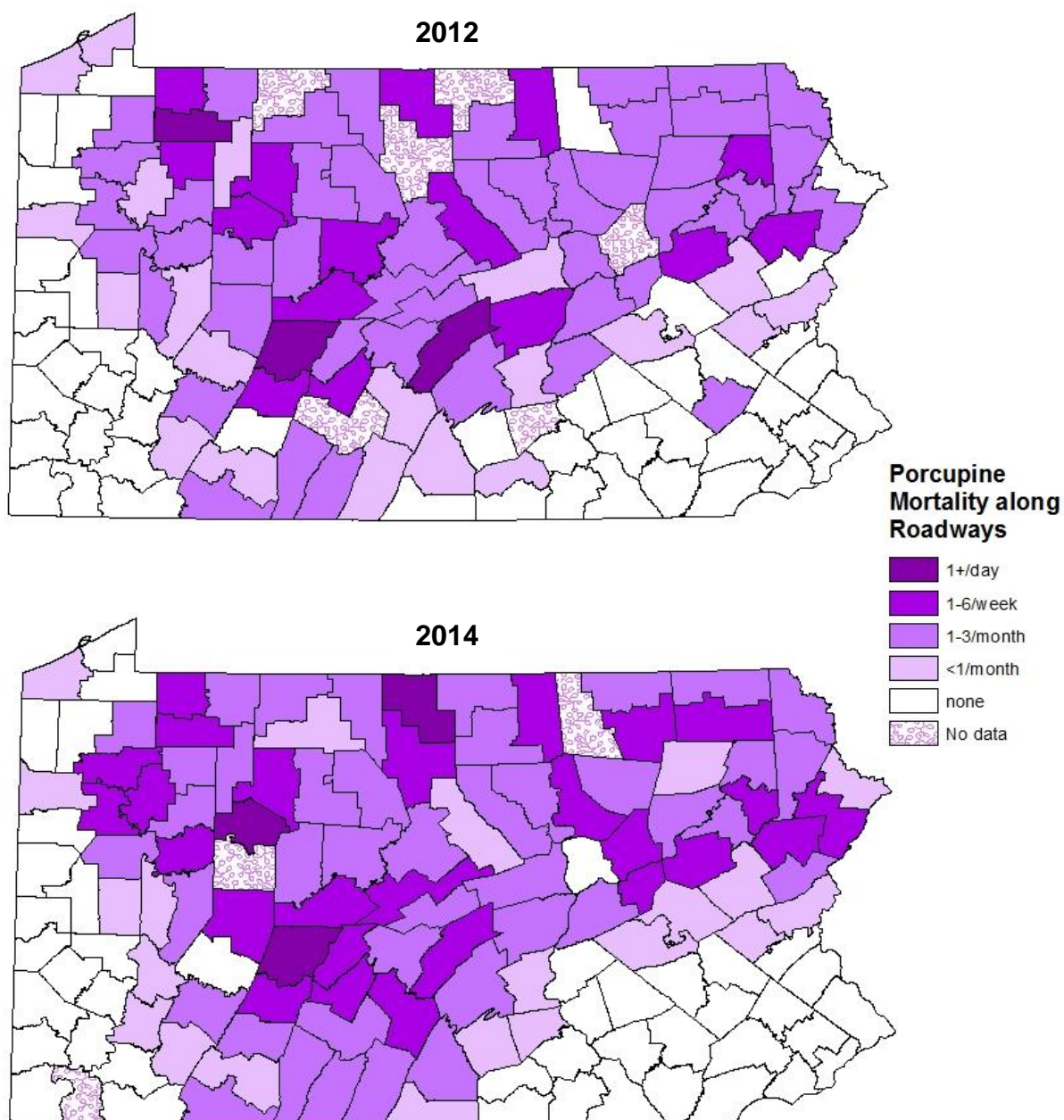


Figure 8. Wildlife Conservation Officer rates of porcupine mortality observation along roadways during 2012 and 2014.