

# 2019-2020 Virginia Trapper Harvest Survey

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**By**

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## **ABSTRACT**

A mail survey was conducted following the 2019-2020 season to quantify trapper harvest and effort for furbearer species. Surveys were mailed to 1,500 randomly selected trappers who held annual or multi-year trapping licenses valid during the 2019-2020 season ( $N=1,812$ ). Of the 1,500 surveys mailed, 512 (34.1%) were returned and all contained some usable data. Of the trappers who responded, 323 (63.1%) reported that they trapped during the 2019-2020 season (active trappers) and 189 (36.9%) reported that they did not trap (non-active trappers). The number of active trappers that provided usable information for some level of analysis was 323 (%). On average, active trappers set 12.0 ( $SE \pm 0.4$ ) traps for 25.8 ( $SE \pm 0.6$ ) days during the 2019-2020 season. Response data was used to estimate trapping experiences of non-respondents and calculate total harvest, number of trappers, trapping effort, and catch per unit effort for each furbearer species statewide and by region. Trappers harvested an estimated statewide total of  $39,871 \pm 3,147$  furbearers. Raccoons and opossum were the most-harvested species with estimated totals of 11,159 and 5,783, respectively. Observations of fishers, spotted skunks, and least weasels were also reported by trappers.

## **GOAL & OBJECTIVE**

To quantify 2019-2020 statewide trapper effort and furbearer harvest and obtain additional occurrence information for rare furbearer species (i.e., fisher, spotted skunk, and least weasel).

## **METHODS**

A total of 1,812 persons possessed Virginia trapping licenses valid during the 2019-2020 trapping season (Table 1a). From that total, a random sample of 1,500 persons was selected using information from the Virginia Department of Game & Inland Fisheries license database. The sample represented 82.8% of all license holders who held a valid license for some portion the 2019-2020 season. On 10 June 2020, each trapper was mailed a one-page (front and back) questionnaire (Appendix A), cover letter (Appendix B), and a postage-paid return envelope. A reminder postcard (Appendix C) was sent to non-respondents on 24 July 2020 ( $N=1,208$ ). A third and final mailing identical to the first was sent around 10 September 2020 to survey recipients who did not respond to the previous two mailings ( $N=1,086$ ). No surveys were reported as undeliverable so the effective sampling total was 1,500. The number of surveys returned from each mailing was 292, 122, and 98 respectively. Trapping season date

information is provided in Appendix D. Survey response data (i.e., harvest data) were entered into an Access database where they were checked for quality and cleaned prior to statistical analyses.

*Data Analysis.*—Descriptive and inferential statistical analyses were conducted in Microsoft Excel or RStudio (R Core Team 2018) with the assistance of R library packages “dplyr” (Wickham et al. 2018) and “survey” (Lumley 2017). Raw harvest data (county, species, number harvested, days trapped, number traps) were imported from the Access database, and used to create and append additional variables to the matrix, including trap region, number of trap days, whether the data record represented target or non-target efforts and if trap efforts were successful. Successful harvest data were considered non-target harvest, or “bycatch”, if the respondent reported take but zero trap days (i.e., number of days x number of traps), or if the species was marked as “non-target” in the response. These variables were used to subset and analyze data by target versus non-target efforts, successful versus non-successful efforts, and by region.

Where possible, data were reviewed for consistency and correction. In cases where it appeared that respondents provided suitable information but did not complete the entry correctly, we attempted to correct the errors. For example, respondents were instructed to identify only one species as the primary target in sets where multiple species were considered. In several instances respondents identified more than one species as primary which could result in inflated estimates of total effort. In these cases, we selected a primary species (following an a priori set of rules) and changed the other species to secondary. This change does not affect any estimates related to individual species values, but does correct for overall effort estimates.

We attempted to utilize all data provided whenever possible. For example, respondents may provide information about their harvest but neglect to identify the county in which the catch occurred. That information was retained when analyzing state-level metrics but was omitted from regional values; therefore the number of respondents included for each level of analysis may differ. This results in differences in calculated metrics that are presented in data tables. Further, estimates related to “per capita” estimates such as the mean number of traps deployed per day are the result of consolidating effort by trapper. So, trappers who reported effort in more than one county have been aggregated to avoid inflation of these metrics.

Input data for inferential statistical analyses conducted with R package “survey” were prepared by summarizing (subset) harvest data by individual trappers (rows) and species (columns) for the parameter of interest. Using these new input matrices, statewide and regional statistics (Tables 9–12) were estimated using the “svydesign()” function in R which allows for the incorporation of a finite population correction factor (FPC). Whereas standard deviations (SD) are presented to describe the variability of survey response data (e.g., *average* days trapped; descriptive statistics) and provide ranges for estimates, standard errors (SE) are presented to provide a measure of precision around estimated parameters (e.g., *estimated* total number of furbearer species harvested) and were calculated by dividing the standard deviation (SD) by the square root of the appropriate sample size.

In addition, as is recommended when sampling is conducted without replacement from more than 5% of a finite population, a finite population correction factor (FPC) was used to calculate SE (i.e., more than 5% of the population of 2019-2020 trappers were sampled; 512 samples; finite population = 1,812 trapping licenses) (Lumley 2010; Thompson 2012).

## RESULTS SUMMARY

A total of 512 (34.1% effective response rate) license holders responded to the survey (Table 1b). Of the 512 surveys returned, all were considered usable responses for some aspect of the analysis. Of these, 10 were considered unusable (contained incomplete or unreliable data) for county/effort analysis. Of the 512 total returned surveys, 323 (63.1%) reported trapping activity during the 2019-2020 season (active trappers) and 189 (36.9%) reported no trapping activity (non-active trappers). Statewide, an estimated 1,044 trappers set, on average, 12.0 ( $SE \pm 0.4$ ) traps for 25.8 ( $SE \pm 0.6$ ) days and harvested an estimated total of  $39,871 \pm 3,147$  furbearers (Tables 11 and 12). By species, total statewide trapper harvest was estimated to be 11,159 raccoons, 5,783 opossums, 5,280 muskrats, 4,721 red foxes, 4,304 coyotes, 3,907 beavers, 1,447 gray foxes, 1,299 striped skunks, 895 bobcats, 782 otters, 202 mink, 32 nutria, and 60 long-tailed weasels (Table 11). Average harvest per season for trappers targeting certain species was highest for muskrat, followed by raccoon, beaver, long-tailed weasel, red fox, opossum, nutria, coyote, striped skunk, otter, gray fox, bobcat, and mink (Table 12). Trapper responses by license type and reported numbers of trappers, effort, and harvest from response data are presented in Tables 1–

8. Extrapolated statewide and regional trapping effort and harvest estimates for all furbearer species are presented in Tables 9–12. Rare furbearer observations are reported in Table 13.

It should be noted that the number of long-tailed weasels reported in 2020, along with related estimates derived from that value, are likely erroneous. The number of respondents reporting they targeted long-tailed weasel is low, and information provided is suspect.

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## TABLES & FIGURES

Table 1a. Summary of licenses sold for the 2019-2020 season.

License Type	Total		Sample	
	N	%	N	%
County/City Resident Trapping	654	36.1	540	36.0
Non-Resident State Trapping	28	1.5	25	1.7
Resident 65 and older Trapping	127	7.0	108	7.2
Resident Junior State Trapping	71	3.9	54	3.6
Resident State Trapping	890	49.1	736	49.1
Resident State Trapping - 2 Years	24	1.3	21	1.4
Resident State Trapping - 3 Years	4	0.2	4	0.3
Resident State Trapping - 4 Years	654	0.8	12	0.8
Total	1,812		1,500	

Table 1b. Summary of trapping licenses sold in Virginia (2018-2019), license types represented in the survey sample, and license types represented by those who responded (active and non-active trappers) to the 2018-2019 Virginia Trapper Harvest Survey.

License Type	No. licensed trappers	% of licensed trappers	No. in survey sample	% in survey sample	No. of respondents	% of respondents <sup>1</sup>	No. active trappers	% of active respondents <sup>1</sup>	No. non-active trappers	% of non-active respondents <sup>2</sup>
Annual	1,742	96.1	1,438	95.9	488	33.9	310	63.5	178	36.5
Multi-year	42	2.3	37	2.5	12	32.4	7	58.3	5	41.7
Non-resident	28	1.5	25	1.7	12	48.0	6	50.0	6	50.0
Total	1,812		1,500	82.8	512	34.1	323	63.1	189	36.9

<sup>1</sup> Derived by dividing the number of respondents by the total number in the survey sample for each license type

<sup>2</sup> Derived by dividing the number of active/non-active trappers by the total number of respondents for each license type

Table 2a. Summary of survey responses containing various levels of information.

Response Category	No. of respondents
Total active trappers responding	323
Total that provided species information	313
Total that also included species information and number captured	299
Total that included effort information (i.e., number of traps and days)	298
Total number that included county information	295
Total respondents that supplied all information	292

Table 2b. Number of Virginia trappers by number of counties trapped and physiographic region.

No. of Counties Trapped	No. of Active Trappers	% of Trappers
One	231	71.5
Two	51	15.8
Three or more	13	4.0
No county reported	28	8.7
Total	323	100.0

Region Trapped	No. of Active Trappers <sup>1</sup>	% of Trappers <sup>2</sup>
Northern Mountain	52	17.6
Southern Mountain	62	21.0
Northern Piedmont	63	21.4
Southern Piedmont	65	22.0
Tidewater	69	23.4

<sup>1</sup> An individual trapper may trap in multiple regions; hence, the summation of these values will not equal totals by county/city

<sup>2</sup> Derived by dividing number of trappers in region by total number of trappers that reported county information (N=295)

Table 3a. Targeted furbearer trapping efforts reported by respondents to the 2019-2020 Virginia Trapper Harvest Survey (N= 292).

Target species	No. trappers that targeted species	% of total active trappers	Total no. days trapped	Average no. days trapped	Average no. traps set per day per trapper	Total no. of trap days
Beaver	108	37.0	1,854	17.2	8.4	15,622
Bobcat	77	26.4	2,082	27.0	11.2	23,389
Coyote	190	65.1	6,432	33.9	14.2	91,267
Gray Fox	46	15.8	1,303	28.3	10.3	13,427
Long-tailed Weasel	2	0.7	23	11.5	3.5	81
Mink	17	5.8	346	20.4	8.1	2,788
Muskrat	56	19.2	1,176	21.0	16.3	19,173
Nutria	1	0.3	10	10.0	2.0	20
Opossum	3	1.0	147	49.0	13.3	1,960
Otter	37	12.7	938	25.4	9.3	8,721
Raccoon	118	40.4	3,508	29.7	12.7	44,653
Red Fox	95	32.5	2,800	29.5	12.4	34,720
Striped Skunk	9	3.1	204	22.7	4.3	884
All Species	292					15,622

Table 3b. Summary of trapping days for each group used to estimate overall mean number of days and number of traps used (N=292 trappers).

Species Group	Sum Max Days	Sum Max Traps	Average Days	Average Traps
Beaver/Otter	2,320	1,008	7.9	3.5
Bobcat/Coyote	6,808	2,981	23.3	10.2
Red Fox/Gray Fox/Skunk/Opossum	3,335	1,343	11.4	4.6
Muskrat/Nutria	1,176	913	4.0	3.1
Mink	346	137	1.2	0.5
Raccoon	3,508	1,502	12.0	5.1
Weasel	23	7	0.1	0.0
All Species	17,516	7,891	28.0	12.6

**Table 4 .** Reported number of successful trappers by species for target and non-target trapping efforts in Virginia, 2019-2020 (N = 292 number of trappers who supplied necessary data).

Species	# Successful trappers					
	Target		Non-target		Total	
	No.	% <sup>1</sup>	No.	% <sup>2</sup>	No.	% <sup>3</sup>
Beaver	99	91.7	2	1.0	101	34.6
Bobcat	53	68.8	1	0.4	54	18.5
Coyote	142	74.7	0	0.0	142	48.6
Gray Fox	34	73.9	7	2.7	41	14.0
Long-tailed Weasel	1	50.0	1	0.3	2	0.7
Mink	5	29.4	1	0.3	6	2.1
Muskrat	51	91.1	6	2.5	57	19.5
Nutria	1	100.0	2	0.7	3	1.0
Opossum	3	100.0	134	46.4	137	46.9
Otter	30	81.1	6	2.3	36	12.3
Raccoon	112	94.9	46	25.6	158	54.1
Red Fox	84	88.4	5	2.4	89	30.5
Striped Skunk	6	66.7	63	22.0	69	23.6

<sup>1</sup> of total active trappers who reported targeting the species (see Table 3a)

<sup>2</sup> of total active trappers who did not target that species

<sup>3</sup> of total active trappers who supplied necessary data (N=292)

**Table 5.** Reported harvest by species for target and non-target trapping efforts in Virginia, 2019-2020 (N=295).

Species	Target harvest	% of total	Non-target harvest	% of total	Total harvest
Beaver	1,050	99.2	9	0.8	1,059
Bobcat	150	99.3	1	0.7	151
Coyote	1,134	100.0	0	0.0	1,134
Gray Fox	170	89.9	19	10.1	189
Long-tailed Weasel	13	76.5	4	23.5	17
Mink	44	97.8	1	2.2	45
Muskrat	2,036	98.9	22	1.1	2,058
Nutria	5	55.6	4	44.4	9
Opossum	23	1.7	1,363	98.3	1,386
Otter	156	82.1	34	17.9	190
Raccoon	2,054	84.9	364	15.1	2,418
Red Fox	898	97.8	20	2.2	918
Striped Skunk	48	14.7	279	85.3	327
Total	7,781	78.6	2,120	21.4	9,901

Table 6. Frequency distribution of trappers by total number of each species harvested in 2019-2020 ( $N=299$  active trappers providing species and capture numbers). Note, when interpreting this table, the number of trappers that harvested “0” individuals includes trappers that actively targeted the species and those who did not target the species.

Total number harvested during season	Total no. of trappers in each harvest category															
	Beaver		Bobcat		Coyote		Gray Fox	Weasel	Long-tailed		Nutria	Otter	Opossum	Raccoon	Red Fox	Striped Skunk
					Mink	Muskrat										
0	175	210	123	202	297	285	220	296	104	240	52	125	215			
1–5	70	77	118	79	1	12	37	3	112	49	123	124	59			
6–10	27	10	30	6	0	1	20	0	35	6	53	30	19			
11–15	9	1	8	9	1	0	6	0	11	1	24	8	4			
16–20	5	1	9	0	0	0	4	0	18	1	8	6	0			
21–25	5	0	3	1	0	0	1	0	7	0	8	3	2			
26–50	6	0	5	2	0	1	2	0	10	2	20	3	0			
51–75	1	0	2	0	0	0	4	0	2	0	8	0	0			
76–100	0	0	1	0	0	0	2	0	0	0	1	0	0			
>100	1	0	0	0	0	0	3	0	0	0	2	0	0			

Table 7. Reported harvest of furbearer species and percent of statewide harvest by region in Virginia, 2019-2020 (N=297 active trappers providing location, species, and number captured).

Species	State total	Region												
		Northern Mountain			Northern Piedmont		Southern Mountain		Southern Piedmont		Tidewater		Unknown	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	
Beaver	1,104	50	4.5		217	19.7	83	7.5	230	20.8	388	35.1	136	12.3
Bobcat	255	28	11.0		9	3.5	81	31.8	76	29.8	52	20.4	9	3.5
Coyote	1,219	115	9.4		143	11.7	454	37.2	247	20.3	213	17.5	47	3.9
Gray Fox	421	27	6.4		29	6.9	98	23.3	157	37.3	80	19.0	30	7.1
Long-tailed Weasel	17	4	23.5		0	0.0	0	0.0	0	0.0	0	0.0	13	76.5
Mink	57	6	10.5		1	1.8	41	71.9	0	0.0	8	14.0	1	1.8
Muskrat	1,493	118	7.9		51	3.4	222	14.9	122	8.2	704	47.2	276	18.5
Nutria	9	0	0.0		0	0.0	0	0.0	0	0.0	4	44.4	5	55.6
Opossum	1,637	169	10.3		184	11.2	438	26.8	364	22.2	417	25.5	65	4.0
Otter	221	3	1.4		20	9.0	24	10.9	58	26.2	87	39.4	29	13.1
Raccoon	3,157	615	19.5		377	11.9	817	25.9	680	21.5	572	18.1	96	3.0
Red Fox	1,339	371	27.7		335	25.0	140	10.5	188	14.0	273	20.4	32	2.4
Striped Skunk	367	62	16.9		29	7.9	90	24.5	114	31.1	60	16.3	12	3.3
Grand Total	11,296	1,568	13.9		1,395	12.3	2,488	22.0	2,236	19.8	2,858	25.3	751	6.6

Table 8. Reported harvest of furbearer species by county in Virginia, 2019-2020 (N=297 trappers providing necessary data).

County	Species												
	Beaver	Bobcat	Coyote	Gray Fox	Long-tailed Weasel	Mink	Muskrat	Nutria	Opossum	Otter	Raccoon	Red Fox	Striped Skunk
Accomack	0	0	4	11	0	0	0	0	46	0	143	191	0
Albemarle	0	0	0	0	0	0	0	0	0	0	6	2	0
Alleghany	0	6	1	1	0	0	0	0	0	0	36	1	0
Amelia	0	1	3	0	0	0	0	0	7	0	8	10	12
Amherst	3	0	5	0	0	0	0	0	1	0	1	1	0
Appomattox	0	0	0	0	0	0	1	0	5	1	2	1	0
Augusta	13	5	13	6	0	0	17	0	28	1	70	64	13
Bath	7	2	5	2	0	0	2	0	3	0	5	0	0
Bedford	5	12	14	32	0	0	2	0	84	2	124	31	11
Bland	0	4	6	2	0	1	6	0	22	3	62	5	7
Botetourt	0	4	62	17	0	0	0	0	8	1	21	19	1
Brunswick	11	5	3	0	0	0	1	0	5	1	6	1	0
Buchanan	4	12	24	2	0	1	0	0	43	0	19	7	7
Buckingham	0	2	5	1	0	0	1	0	4	0	1	3	1
Campbell	6	0	12	18	0	0	0	0	16	0	40	26	0
Caroline	61	2	35	15	0	0	10	0	30	7	18	27	0
Carroll	17	3	90	7	0	0	14	0	78	2	128	38	7
Charles City	5	5	30	5	0	0	5	0	35	0	56	2	7
Charlotte	73	4	12	0	0	0	26	0	8	29	10	4	12
Chesapeake	34	2	26	5	0	0	0	2	51	8	26	9	0
Chesterfield	4	0	1	0	0	0	0	0	2	0	0	2	0
Clarke	0	0	48	1	0	0	0	0	64	0	316	124	12
Craig	0	0	0	5	0	0	0	0	4	0	6	3	0
Culpeper	23	3	7	0	0	0	0	0	10	1	16	5	0
Cumberland	4	0	2	2	0	0	8	0	20	5	30	10	8
Dickenson	4	5	10	4	0	0	0	0	36	0	10	2	0
Dinwiddie	21	6	18	0	0	0	0	0	6	2	8	5	3
Essex	14	0	4	0	0	0	6	0	6	0	20	1	0
Fairfax	0	0	0	0	0	0	0	0	1	0	11	30	0
Fairfax (City)	0	0	0	0	0	0	0	0	0	3	2	0	0
Fauquier	5	0	2	0	0	0	0	0	0	0	2	3	0
Fairfax	0	0	0	0	0	0	0	0	1	0	11	30	0

Table 8 (continued). Reported harvest of furbearer species by county in Virginia, 2019-2020

County	Species												
	Beaver	Bobcat	Coyote	Gray Fox	Long-tailed Weasel	Mink	Muskrat	Nutria	Opossum	Otter	Raccoon	Red Fox	Striped Skunk
Floyd	5	4	8	3	0	0	0	0	5	0	27	1	8
Fluvanna	2	0	2	4	0	0	0	0	11	2	5	11	2
Franklin	8	1	21	4	0	0	0	0	50	0	48	19	8
Frederick	0	1	14	9	0	0	0	0	13	0	64	50	2
Giles	0	0	2	0	0	0	0	0	36	0	45	2	6
Gloucester	23	0	0	8	0	0	6	0	57	2	12	2	0
Goochland	6	0	4	3	0	0	1	0	10	1	12	4	3
Grayson	7	2	10	0	0	3	16	0	34	0	23	5	6
Greenville	93	15	63	4	0	0	5	2	45	19	71	4	5
Halifax	1	12	20	14	0	0	0	0	37	1	23	9	30
Hanover	16	0	2	0	0	0	18	0	38	0	46	4	0
Henrico	29	0	0	0	0	0	4	0	0	1	2	1	0
Henry	5	0	7	2	0	0	1	0	0	1	5	0	0
Highland	0	12	10	1	0	0	0	0	0	0	4	4	0
Isle of Wight	10	4	17	1	0	0	0	0	35	3	39	10	7
James City	2	0	1	1	0	0	0	0	6	0	6	0	0
King & Queen	14	5	1	0	0	1	25	0	2	0	4	5	0
King George	0	0	0	0	0	0	0	0	1	0	4	0	0
King William	51	3	2	12	0	7	472	0	12	8	22	3	0
Lancaster	0	0	2	0	0	0	0	0	6	0	0	1	0
Lee	0	0	0	0	0	0	0	0	0	0	0	0	0
Loudoun	0	1	11	1	0	0	3	0	38	0	114	123	7
Louisa	14	0	18	1	0	1	4	0	16	0	28	23	3
Lunenburg	0	5	0	1	0	0	0	0	17	3	14	3	1
Madison	9	0	7	1	0	0	1	0	2	0	16	4	0
Mecklenburg	2	0	7	5	0	0	0	0	10	2	3	12	0
Middlesex	14	1	2	0	0	0	0	0	0	1	2	2	3
Montgomery	2	0	2	8	0	1	20	0	0	3	12	4	0
Nelson	0	1	1	1	0	0	0	0	2	0	1	3	1
New Kent	17	0	12	2	0	0	6	0	18	3	21	8	9

Table 8 (continued). Reported harvest of furbearer species by county in Virginia, 2019-2020.

County	Species												
	Beaver	Bobcat	Coyote	Gray Fox	Long-tailed Weasel	Mink	Muskrat	Nutria	Opossum	Otter	Raccoon	Red Fox	Striped Skunk
Northampton	0	0	0	0	0	0	58	0	0	0	2	11	0
Northumberland	0	0	8	0	0	0	1	0	0	0	1	2	0
Nottoway	73	17	57	29	0	0	71	0	4	0	187	11	0
Orange	12	0	16	0	0	0	0	0	6	0	31	10	0
Page	4	1	2	5	0	5	24	0	4	0	42	23	9
Patrick	0	2	20	0	0	0	0	0	20	0	59	2	15
Petersburg	0	0	0	0	0	0	0	0	0	0	0	4	0
Pittsylvania	18	8	38	48	0	0	11	0	58	11	97	28	5
Powhatan	18	3	11	3	0	0	10	0	4	2	36	12	7
Prince Edward	0	0	2	0	0	0	0	0	10	0	13	9	7
Prince George	16	0	3	0	0	0	0	0	0	1	14	0	0
Prince William	1	0	11	0	0	0	0	0	6	3	11	35	1
Pulaski	7	0	5	3	0	33	82	0	0	2	48	1	0
Radford	0	0	0	3	0	0	0	0	4	0	2	3	1
Richmond	18	0	7	2	0	0	93	0	7	0	37	4	0
Roanoke	1	0	7	0	0	0	3	0	5	1	7	3	0
Rockbridge	22	0	2	0	0	0	0	0	6	0	18	0	0
Rockingham	0	1	20	0	4	1	74	0	33	2	37	81	23
Russell	0	12	18	27	0	0	0	0	9	0	67	6	1
Scott	0	1	3	0	0	0	0	0	6	0	20	2	0
Shenandoah	0	0	0	2	0	0	1	0	6	0	11	10	2
Smyth	3	3	15	0	0	0	9	0	17	0	23	4	0
Southampton	53	13	26	26	0	0	8	0	42	28	25	18	29
Spotsylvania	17	0	13	1	0	0	0	0	5	0	13	22	2
Stafford	0	0	3	0	0	0	0	0	5	0	8	13	4
Suffolk	0	2	0	3	0	0	0	0	11	0	11	0	0
Surry	4	0	3	0	0	0	0	0	5	0	2	0	0
Sussex	10	0	2	0	0	0	0	0	1	4	10	0	0
Tazewell	27	12	86	7	0	0	19	0	26	3	104	10	11
Smyth	3	3	15	0	0	0	9	0	17	0	23	4	0
Southampton	53	13	26	26	0	0	8	0	42	28	25	18	29

Table 8 (continued). Reported harvest of furbearer species by county in Virginia, 2019-2020.

County	Species												
	Beaver	Bobcat	Coyote	Gray Fox	Long-tailed Weasel	Mink	Muskrat	Nutria	Opossum	Otter	Raccoon	Red Fox	Striped Skunk
Spotsylvania	17	0	13	1	0	0	0	0	5	0	13	22	2
Stafford	0	0	3	0	0	0	0	0	5	0	8	13	4
Suffolk	0	2	0	3	0	0	0	0	11	0	11	0	0
Surry	4	0	3	0	0	0	0	0	5	0	2	0	0
Sussex	10	0	2	0	0	0	0	0	1	4	10	0	0
Tazewell	27	12	86	7	0	0	19	0	26	3	104	10	11
Virginia Beach	2	2	0	0	0	0	19	0	2	6	3	0	0
Warren	0	0	0	0	0	0	0	0	3	0	9	14	0
Washington	0	3	9	0	0	0	8	0	19	0	18	2	0
Waynesboro	4	0	0	0	0	0	0	0	9	0	3	0	1
Westmoreland	4	0	0	0	0	0	0	0	0	0	0	0	0
Wise	0	7	25	0	0	0	0	0	34	0	39	2	0
Wythe	6	9	72	10	0	2	45	0	52	9	136	21	35
York	4	0	0	0	0	0	0	0	29	4	41	0	0
UNKNOWN	136	9	47	30	13	1	276	5	65	29	96	32	12
State total	1,104	255	1,219	421	17	57	1,493	9	1,637	221	3,157	1,339	367

**Table 9.** Expanded statewide estimates of the total number of trappers by targeted furbearer species in Virginia, 2019-2020.

Species	Est. no. trappers	95% confidence interval		
		SE	Lower	Upper
Beaver	400	28	399	514
Bobcat	428	29	409	525
Coyote	697	33	751	884
Gray Fox	396	28	385	500
Long-tailed Weasel	7	4	0	15
Mink	113	16	84	149
Muskrat	269	24	232	328
Nutria	4	3	0	9
Opossum	106	16	87	153
Otter	195	21	176	263
Raccoon	637	32	660	791
Red Fox	626	32	643	773
Striped Skunk	57	12	36	84

**Table 9a.** Expanded statewide estimates of the total number of trappers by targeted furbearer species in the Northern Mountain region of Virginia, 2019-2020.

Species	Est. no. trappers	95% confidence interval		
		SE	Lower	Upper
Beaver	32	9	14	49
Bobcat	67	13	42	92
Coyote	120	17	87	153
Gray Fox	71	13	45	97
Long-tailed Weasel	0	0	0	0
Mink	25	8	9	40
Muskrat	57	12	33	80
Nutria	0	0	0	0
Opossum	7	4	0	15
Otter	14	6	2	26
Raccoon	120	17	87	153
Red Fox	138	18	103	173
Striped Skunk	18	7	5	31

Table 9b. Expanded statewide estimates of the total number of trappers by targeted furbearer species in the Southern Mountain region of Virginia, 2019-2020.

Species	Est. no. trappers	95% confidence interval		
		SE	Lower	Upper
Beaver	50	11	28	71
Bobcat	120	17	87	153
Coyote	159	19	122	197
Gray Fox	88	15	60	117
Long-tailed Weasel	0	0	0	0
Mink	32	9	14	49
Muskrat	64	12	39	88
Nutria	0	0	0	0
Opossum	35	9	17	54
Otter	42	10	22	63
Raccoon	149	19	112	185
Red Fox	120	17	87	153
Striped Skunk	14	6	2	26

Table 9c. Expanded statewide estimates of the total number of trappers by targeted furbearer species in the Northern Piedmont region of Virginia, 2019-2020.

Species	Est. no. trappers.	95% confidence interval		
		SE	Lower	Upper
Beaver	85	14	57	113
Bobcat	28	8	12	45
Coyote	110	16	78	141
Gray Fox	32	9	14	49
Long-tailed Weasel	4	3	0	9
Mink	18	7	5	31
Muskrat	35	9	17	54
Nutria	0	0	0	0
Opossum	18	7	5	31
Otter	21	7	7	36
Raccoon	117	17	84	149
Red Fox	99	15	69	129
Striped Skunk	7	4	0	15

Table 9d. Expanded statewide estimates of the total number of trappers by targeted furbearer species in the Southern Piedmont region of Virginia, 2019-2020.

Species	Est. no. trappers	SE	95% confidence interval	
			Lower	Upper
Beaver	57	12	33	80
Bobcat	103	16	72	133
Coyote	145	18	109	181
Gray Fox	106	16	75	137
Long-tailed Weasel	0	0	0	0
Mink	7	4	0	15
Muskrat	21	7	7	36
Nutria	0	0	0	0
Opossum	18	7	5	31
Otter	35	9	17	54
Raccoon	113	16	81	145
Red Fox	142	18	106	177
Striped Skunk	7	4	0	15

Table 9e. Expanded statewide estimates of the total number of trappers by targeted furbearer species in the Tidewater region of Virginia, 2019-2020.

Species	Est. no. trappers.	SE	95% confidence interval	
			Lower	Upper
Beaver	103	16	72	133
Bobcat	53	11	31	76
Coyote	113	16	81	145
Gray Fox	50	11	28	71
Long-tailed Weasel	0	0	0	0
Mink	4	3	0	9
Muskrat	46	11	25	67
Nutria	0	0	0	0
Opossum	21	7	7	36
Otter	50	11	28	71
Raccoon	85	14	57	113
Red Fox	74	13	48	101
Striped Skunk	4	3	0	9

Table 10. Expanded statewide estimates of the total number of successful target and non-target trappers by furbearer species in Virginia, 2019-2020.

Species	Target				Non-target				Total			
	Est. no. trappers		95% CI		Est. no. trappers		95% CI		Est. no. trappers		95% CI	
	SE	Lower	Upper	SE	Lower	Upper	SE	Lower	Upper	SE	Lower	Upper
Beaver	400	9	335	465	11	2	0	23	407	9	341	472
Bobcat	428	10	362	495	4	1	0	10	432	10	365	499
Coyote	697	11	621	774	7	1	0	17	704	11	628	781
Gray Fox	396	9	331	461	21	2	4	38	414	10	348	480
Long-tailed Weasel	7	1	0	17	7	1	0	17	14	2	0	28
Mink	113	5	75	151	7	1	0	17	120	6	81	159
Muskrat	269	8	213	325	21	2	4	38	287	8	229	344
Nutria	4	1	0	10	11	2	0	23	14	2	0	28
Opossum	106	5	69	143	506	10	436	577	602	11	528	676
Otter	195	7	146	243	21	2	4	38	216	7	165	267
Raccoon	637	11	562	712	166	7	121	212	793	11	715	871
Red Fox	626	11	552	701	21	2	4	38	648	11	572	723
Striped Skunk	57	4	29	84	237	8	184	290	294	8	236	352
All Species	1,044	11	966	1,122	609	11	535	683	1,051	11	974	1,129

Table 10a. Expanded statewide estimates of the total number of successful target and non-target trappers by furbearer species in the Northern Mountain region of Virginia, 2019-2020.

Species	Target				Non-target				Total			
	Est. no. trappers		95% CI		Est. no. trappers		95% CI		Est. no. trappers		95% CI	
	SE	Lower	Upper	SE	Lower	Upper	SE	Lower	Upper	SE	Lower	Upper
Beaver	32	3	11	52	0	0	0	0	32	3	11	52
Bobcat	57	4	29	84	0	0	0	0	57	4	29	84
Coyote	113	5	75	151	0	0	0	0	113	5	75	151
Gray Fox	67	4	38	97	7	1	0	17	74	4	43	105
Long-tailed Weasel	0	0	0	0	4	1	0	10	4	1	0	10
Mink	25	3	7	43	0	0	0	0	25	3	7	43
Muskrat	53	4	27	80	0	0	0	0	53	4	27	80
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	4	1	0	10	81	5	49	114	85	5	52	118
Otter	14	2	0	28	0	0	0	0	14	2	0	28
Raccoon	113	5	75	151	18	2	2	33	127	6	87	168
Red Fox	127	6	87	168	4	1	0	10	131	6	90	172
Striped Skunk	18	2	2	33	39	3	16	62	57	4	29	84
All Species	173	7	127	220	92	5	58	126	173	7	127	220

Table 10b. Expanded statewide estimates of the total number of successful target and non-target trappers by furbearer species in the Southern Mountain region of Virginia, 2019-2020.

Species	Target				Non-target				Total			
			95% CI				95% CI				95% CI	
	Est. no. trappers	SE	Lower	Upper	Est. no. trappers	SE	Lower	Upper	Est. no. trappers	SE	Lower	Upper
Beaver	60	4	32	88	4	1	0	10	60	4	32	88
Bobcat	131	6	90	172	4	1	0	10	134	6	93	176
Coyote	173	7	127	220	4	1	0	10	177	7	130	224
Gray Fox	106	5	69	143	0	0	0	0	106	5	69	143
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0
Mink	35	3	14	57	4	1	0	10	39	3	16	62
Muskrat	71	4	40	101	0	0	0	0	71	4	40	101
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	35	3	14	57	103	5	66	139	138	6	96	180
Otter	50	4	24	75	4	1	0	10	53	4	27	80
Raccoon	159	6	115	204	21	2	4	38	180	7	133	227
Red Fox	138	6	96	180	0	0	0	0	138	6	96	180
Striped Skunk	14	2	0	28	57	4	29	84	71	4	40	101
All Species	209	7	159	259	124	6	84	163	209	7	159	259

Table 10c. Expanded statewide estimates of the total number of successful target and non-target trappers by furbearer species in the Northern Piedmont region of Virginia, 2019-2020.

Species	Target				Non-target				Total			
	Est. no. trappers	SE	95% CI		Est. no. trappers	SE	95% CI		Est. no. trappers	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Beaver	106	5	69	143	0	0	0	0	106	5	69	143
Bobcat	32	3	11	52	0	0	0	0	32	3	11	52
Coyote	113	5	75	151	0	0	0	0	113	5	75	151
Gray Fox	35	3	14	57	7	1	0	17	39	3	16	62
Long-tailed Weasel	4	1	0	10	0	0	0	0	4	1	0	10
Mink	25	3	7	43	4	1	0	10	28	3	9	48
Muskrat	53	4	27	80	4	1	0	10	57	4	29	84
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	25	3	7	43	85	5	52	118	106	5	69	143
Otter	32	3	11	52	4	1	0	10	35	3	14	57
Raccoon	131	6	90	172	35	3	14	57	163	6	118	208
Red Fox	110	5	72	147	4	1	0	10	113	5	75	151
Striped Skunk	11	2	0	23	35	3	14	57	46	4	21	71
All Species	216	7	165	267	113	5	75	151	216	7	165	267

Table 10d. Expanded statewide estimates of the total number of successful target and non-target trappers by furbearer species in the Southern Piedmont region of Virginia, 2019-2020.

Species	Target				Non-target				Total			
	95% CI				95% CI				95% CI			
	Est. no. trappers	SE	Lower	Upper	Est. no. trappers	SE	Lower	Upper	Est. no. trappers	SE	Lower	Upper
Beaver	71	4	40	101	0	0	0	0	71	4	40	101
Bobcat	120	6	81	159	0	0	0	0	120	6	81	159
Coyote	166	7	121	212	4	1	0	10	170	7	124	216
Gray Fox	106	5	69	143	0	0	0	0	106	5	69	143
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0
Mink	14	2	0	28	0	0	0	0	14	2	0	28
Muskrat	25	3	7	43	7	1	0	17	32	3	11	52
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	21	2	4	38	113	5	75	151	134	6	93	176
Otter	46	4	21	71	4	1	0	10	50	4	24	75
Raccoon	120	6	81	159	28	3	9	48	149	6	106	192
Red Fox	145	6	103	188	4	1	0	10	149	6	106	192
Striped Skunk	11	2	-1	23	64	4	35	93	74	4	43	105
All Species	209	7	159	259	127	6	87	168	212	7	162	263

Table 10e. Expanded statewide estimates of the total number of successful target and non-target trappers by furbearer species in the Tidewater region of Virginia, 2019-2020.

Species	Target				Non-target				Total			
			95% CI				95% CI				95% CI	
	Est. no. trappers	SE	Lower	Upper	Est. no. trappers	SE	Lower	Upper	Est. no. trappers	SE	Lower	Upper
Beaver	120	6	81	159	4	1	0	10	124	6	84	163
Bobcat	67	4	38	97	0	0	0	0	67	4	38	97
Coyote	117	6	78	155	0	0	0	0	117	6	78	155
Gray Fox	64	4	35	93	4	1	0	10	67	4	38	97
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0
Mink	11	2	0	23	0	0	0	0	11	2	0	23
Muskrat	57	4	29	84	11	2	0	23	67	4	38	97
Nutria	0	0	0	0	7	1	0	17	7	1	0	17
Opossum	18	2	2	33	113	5	75	151	127	6	87	168
Otter	46	4	21	71	7	1	0	17	53	4	27	80
Raccoon	103	5	66	139	53	4	27	80	156	6	112	200
Red Fox	92	5	58	126	7	1	0	17	99	5	63	135
Striped Skunk	4	1	0	10	32	3	11	52	35	3	14	57
All Species	227	7	175	278	134	6	93	176	230	8	178	282

Table 11. Expanded statewide estimates of the total number of target and non-target furbearer species harvested in Virginia, 2019-2020. N= 297

Species	Target				Non-target				Total			
	Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Beaver	3,879	524	2,851	4,907	28	19	0	65	3,907	524	2,880	4,935
Bobcat	892	107	682	1,102	4	3	0	9	895	107	686	1,105
Coyote	4,282	480	3,341	5,223	21	18	0	56	4,304	480	3,363	5,244
Gray Fox	1,398	199	1,007	1,788	50	25	0	99	1,447	200	1,055	1,840
Long-tailed Weasel	46	39	0	122	14	12	0	38	60	41	0	140
Mink	198	102	0	399	4	3	0	9	202	102	1	402
Muskrat	5,238	1,177	2,931	7,544	42	17	9	76	5,280	1,176	2,974	7,586
Nutria	18	15	0	47	14	8	0	31	32	17	0	66
Opossum	711	189	341	1,082	5,071	491	4,108	6,035	5,783	510	4,783	6,782
Otter	662	130	406	917	120	79	0	275	782	151	486	1,078
Raccoon	9,920	1,291	7,390	12,450	1,239	300	651	1,826	11,159	1,306	8,598	13,719
Red Fox	4,636	702	3,259	6,013	85	40	7	163	4,721	702	3,345	6,097
Striped Skunk	262	74	117	406	1,037	153	737	1,337	1,299	166	973	1,624
All Species	32,142	2,803	26,649	37,635	7,729	763	6,234	9,225	39,871	3,147	33,704	46,039

Table 11a. Expanded statewide estimates of the total number of target and non-target furbearer species harvested in the Northern Mountain region of Virginia, 2019-2020. N=50

Species	Target				Non-target				Total			
	Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Beaver	177	71	38	316	0	0	0	0	177	71	38	316
Bobcat	99	36	29	169	0	0	0	0	99	36	29	169
Coyote	407	147	118	696	0	0	0	0	407	147	118	696
Gray Fox	85	23	40	130	11	7	0	24	96	23	50	141
Long-tailed Weasel	0	0	0	0	14	12	0	38	14	12	0	38
Mink	21	15	0	51	0	0	0	0	21	15	0	51
Muskrat	418	169	87	748	0	0	0	0	418	169	87	748
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	42	28	0	97	0	0	0	0	42	28	0	97
Otter	1,663	951	0	3,528	566	199	176	957	2,230	1,137	1	4,459
Raccoon	1,469	409	668	2,270	71	36	1	141	1,539	407	741	2,338
Red Fox	304	127	56	553	11	9	0	28	315	127	67	563
Striped Skunk	3,712	1,463	844	6,581	170	49	75	265	3,882	1,498	945	6,819
All Species	1,030	259	522	1,537	842	249	354	1,331	1,872	388	1,112	2,632

Table 11b. Expanded statewide estimates of the total number of target and non-target furbearer species harvested in the Southern Mountain region of Virginia, 2019-2020. N=59

Species	Target				Non-target				Total			
	Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Beaver	287	79	131	442	7	6	0	19	294	79	138	449
Bobcat	283	60	166	400	4	3	0	9	287	60	170	404
Coyote	1,607	333	953	2,260	0	0	0	0	1,607	333	953	2,260
Gray Fox	347	88	174	519	0	0	0	0	347	88	174	519
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0
Mink	142	99	0	336	4	3	0	9	145	99	0	340
Muskrat	786	259	279	1,293	0	0	0	0	786	259	279	1,293
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	202	73	59	345	1,348	238	882	1,815	1,550	235	1,089	2,011
Otter	81	23	35	127	4	3	0	9	85	23	39	131
Raccoon	2,676	426	1,841	3,510	216	76	66	365	2,891	416	2,077	3,706
Red Fox	495	86	326	665	0	0	0	0	495	86	326	665
Striped Skunk	96	44	10	181	223	53	119	327	319	65	192	445
All Species	7,000	1,042	4,958	9,043	1,805	279	1,258	2,352	8,805	1,104	6,640	10,970

Table 11c. Expanded statewide estimates of the total number of target and non-target furbearer species harvested in the Northern Piedmont region of Virginia, 2019-2020. N=61

Species	Target				Non-target				Total			
	Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Beaver	768	145	483	1,053	0	0	0	0	768	145	483	1,053
Bobcat	32	11	10	54	0	0	0	0	32	11	10	54
Coyote	506	111	288	724	0	0	0	0	506	111	288	724
Gray Fox	96	46	5	186	7	4	0	15	103	46	12	193
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0
Mink	4	3	0	9	0	0	0	0	4	3	0	9
Muskrat	173	57	61	285	7	6	0	19	180	57	68	293
Nutria	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	0	0	0	0	527	130	272	782	527	130	272	782
Otter	173	79	19	328	4	3	0	9	177	79	22	332
Raccoon	878	218	451	1,305	308	198	0	696	1,186	284	630	1,742
Red Fox	963	366	245	1,680	42	36	0	113	1,005	366	287	1,723
Striped Skunk	347	111	129	565	85	25	35	135	432	114	209	655
All Species	3,939	633	2,699	5,179	980	313	367	1,594	4,919	862	3,229	6,609

Table 11d. Expanded statewide estimates of the total number of target and non-target furbearer species harvested in the Southern Piedmont region of Virginia, 2019-2020. N=60

Species	Target					Non-target					Total			
	Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE
			Lower	Upper			Lower	Upper			Lower	Upper		
Beaver	814	275	275	1,353	0	0	0	0	814	275	275	1,353		
Bobcat	269	62	148	390	0	0	0	0	269	62	148	390		
Coyote	853	202	457	1,249	21	18	0	56	874	202	479	1,270		
Gray Fox	556	151	260	852	0	0	0	0	556	151	260	852		
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0		
Mink	0	0	0	0	0	0	0	0	0	0	0	0		
Muskrat	421	228	0	867	7	4	0	15	428	227	0	874		
Nutria	0	0	0	0	0	0	0	0	0	0	0	0		
Opossum	103	38	28	177	1,186	224	747	1,624	1,288	220	856	1,720		
Otter	202	93	19	384	4	3	0	9	205	93	23	387		
Raccoon	2,279	632	1,040	3,518	127	51	27	228	2,407	629	1,175	3,639		
Red Fox	651	141	374	928	14	12	0	38	665	141	389	942		
Striped Skunk	53	45	0	141	350	103	149	551	403	110	188	619		
All Species	6,200	1,438	3,383	9,018	1,709	305	1,111	2,308	7,910	1,559	4,854	10,965		

Table 11e. Expanded statewide estimates of the total number of target and non-target furbearer species harvested in the Tidewater region of Virginia, 2019-2020.N=65

Species	Target					Non-target					Total			
	Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE	95% CI		Est. No.	SE
			Lower	Upper			Lower	Upper			Lower	Upper		
Beaver	1,352	235	890	1,813	21	18	0	56	1,373	235	913	1,833		
Bobcat	177	47	85	269	0	0	0	0	177	47	85	269		
Coyote	743	181	389	1,097	0	0	0	0	743	181	389	1,097		
Gray Fox	212	58	99	326	28	24	0	75	241	62	120	362		
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0		
Mink	28	18	0	64	0	0	0	0	28	18	0	64		
Muskrat	2,463	936	630	4,297	28	15	0	58	2,492	935	659	4,324		
Nutria	0	0	0	0	14	8	0	31	14	8	0	31		
Opossum	198	144	0	481	1,267	257	763	1,771	1,465	285	907	2,024		
Otter	209	67	78	340	99	78	0	252	308	100	111	505		
Raccoon	1,568	361	861	2,275	442	200	50	834	2,010	393	1,239	2,781		
Red Fox	938	387	179	1,697	11	7	0	24	948	387	190	1,707		
Striped Skunk	21	18	-14	56	191	79	36	346	212	81	55	370		
All Species	7,910	1,253	5,453	10,367	2,102	476	1,169	3,036	10,012	1,384	7,300	12,724		

Table 12. Statewide estimates and summary statistics for each furbearer species targeted in 2019- 2020.

Species	Est. # trappers that targeted species	% of total licenses <sup>1</sup>	Avg. # days trapped per trapper		Est. total # days trapped		Avg. # traps set per day per trapper		Avg. season harvest per trapper		Avg. harvest per 100 trap days per trapper		Avg. Est. total number of trap days	
			SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Beaver	411	22.7	15.7	1.1	7,000	699	6.7	0.6	8.3	1.0	17.4	2.6	57,648	8,761
Bobcat	293	16.2	27.7	1.5	12,337	1,033	13.9	1.6	1.8	0.2	1.2	0.2	222,119	45,746
Coyote	723	39.9	28.5	1.3	22,724	1,357	13.0	0.9	5.0	0.5	2.1	0.2	386,066	53,096
Gray Fox	175	9.7	28.5	1.8	11,820	1,109	13.5	1.6	2.9	0.3	2.1	0.4	223,251	46,805
Long-tailed Weasel	8	0.4	11.5	3.8	81	52	3.5	0.4	6.5	5.5	31.0	26.2	301	202
Mink	65	3.6	20.8	2.7	2,435	458	11.7	3.2	1.7	0.9	1.6	0.8	19,621	4,231
Muskrat	213	11.8	20.4	1.9	5,486	678	13.2	1.8	18.4	4.0	13.1	2.0	79,951	14,656
Nutria	4	0.2	10.0	0.0	35	30	2.0	0.0	5.0	0.0	25.0	0.0	71	60
Opossum	11	0.6	36.7	5.2	3,897	867	13.7	3.9	6.2	1.2	5.5	1.6	92,164	41,821
Otter	141	7.8	21.3	2.2	4,442	662	8.1	1.2	3.1	0.5	8.3	3.3	36,612	7,956
Raccoon	449	24.8	27.5	1.5	19,047	1,332	11.1	0.9	13.2	1.6	11.6	2.3	277,183	46,614
Red Fox	361	19.9	27.7	1.4	18,640	1,258	12.7	1.0	6.5	1.0	3.4	0.5	302,211	47,490
Striped Skunk	34	1.9	27.6	5.3	1,465	414	26.9	10.7	4.7	1.0	9.8	6.5	64,153	40,451
All Species	1,111	57.6	25.8	0.6	109,410	5,997	12.0	0.4	7.1	0.4	6.6	0.5	1,761,349	303,295

<sup>1</sup>the total number of licenses is 1,812

Table 12a. Northern Mountain region estimates and summary statistics for each furbearer species targeted in 2019-2020.

Species	Est. #	Avg. #			Avg. #			Avg.			Avg.			
	trappers that targeted species	% of total licenses <sup>1</sup>	days trapped per trapper	SE	Est. total # days trapped	SE	traps set per day per trapper	SE	season harvest per trapper	SE	100 trap days per trapper	SE	Est. total number of trap days	SE
Beaver	32	1.8	13.5	2.1	382	119	6.9	0.3	5.8	2.0	5.4	1.0	2,562	778
Bobcat	57	3.1	17.7	2.4	1,189	267	10.9	2.2	1.5	0.5	1.4	0.5	15,420	5,954
Coyote	113	6.2	21.4	2.4	2,499	353	9.0	0.9	3.3	1.2	1.6	0.4	28,320	6,543
Gray Fox	67	3.7	19.5	3.2	1,309	293	8.6	1.8	1.3	0.3	1.4	0.4	14,705	5,687
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mink	25	1.4	13.7	1.9	340	111	11.7	5.5	0.9	0.6	0.2	0.1	3,504	1,603
Muskrat	53	2.9	19.4	4.3	1,097	309	9.2	2.4	7.4	2.7	6.2	2.1	10,805	3,403
Nutria	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	4	0.2	30.0	0	212	180	3.0	0.8	4.5	2.1	6.7	4.2	637	540
Otter	14	0.8	28.3	14.7	400	245	4.5	1.1	0.8	0.4	2.0	1.3	1,263	610
Raccoon	113	6.2	21.9	2.7	2,640	386	10.3	1.9	17.5	7.8	7.5	1.3	29,126	7,102
Red Fox	127	7.0	21.8	2.4	2,930	375	9.6	1.3	8.8	2.8	5.9	2.2	33,879	7,384
Striped Skunk	18	1.0	24.0	10.5	340	190	12.5	7.8	3.3	1.4	3.6	2.4	3,305	2,401
All Species	173	9.5	20.5	1.1	13,339	2,042	9.5	0.6	7.0	1.6	4.1	0.6	143,527	32,859

<sup>1</sup> the total number of licenses is 1,812

Table 12b. Southern Mountain region estimates and summary statistics for each furbearer species targeted in 2019-2020.

Species	Est. # trappers that targeted species	% of total licenses <sup>1</sup>	Avg. # days trapped			Avg. # traps set per day per trapper			Avg. season harvest per trapper			Avg. harvest per 100 trap days per trapper			Est. total number of trap days	
			Est. total # trapped	days	SE	SE	trapper	SE	SE	SE	SE	trap days	SE	SE	SE	SE
Beaver	60	0.0	12.8	2.3	818	198	11.4	3.4	4.5	0.9	18.6	4.8	12,854	4,503		
Bobcat	131	0.1	35.1	3.2	4,590	599	17.3	3.6	2.1	0.4	1.1	0.5	108,724	40,781		
Coyote	173	0.1	35.9	3.3	6,859	710	16.2	2.5	8.4	1.7	2.9	0.5	136,696	40,403		
Gray Fox	106	0.1	32.9	4.0	3,613	583	15.7	3.7	3.0	0.7	3.7	1.3	90,965	40,226		
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mink	35	0.0	28.7	6.3	1,016	328	9.8	2.8	4.0	2.7	0.7	0.4	9,655	3,387		
Muskrat	71	0.0	26.2	4.2	1,759	398	16.3	3.8	11.5	3.4	7.4	2.1	28,518	7,367		
Nutria	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Opossum	35	0.0	57.4	9.7	1,830	562	27.7	12.1	5.9	1.8	0.9	0.3	70,580	40,536		
Otter	50	0.0	19.8	2.6	913	224	11.5	4.6	1.7	0.4	2.4	0.9	9,421	3,687		
Raccoon	159	0.1	35.0	3.5	5,698	712	15.2	2.8	16.1	2.4	9.1	1.9	117,847	40,643		
Red Fox	138	0.1	36.5	3.9	5,302	683	15.1	2.9	3.4	0.5	1.4	0.2	110,206	40,188		
Striped Skunk	14	0.0	48.7	19.8	517	302	54.7	36.4	8.3	1.0	2.9	1.8	49,490	39,874		
All Species	209	0.1	33.1	1.4	32,913	4,726	16.0	1.2	6.9	0.6	4.7	0.5	744,955	287,634		

<sup>1</sup> the total number of licenses is 1,812

Table 12c. Northern Piedmont region estimates and summary statistics for each furbearer species targeted in 2019-2020.

Species	Est. # trappers that targeted species	% of total licenses <sup>1</sup>	Avg. # days trapped per trapper		Est. total # days trapped		Avg. # traps set per day per trapper		Avg. season harvest per trapper		Avg. harvest per 100 trap days per trapper		Est. total number of trap days	
			SE	trapper	SE	days	SE	traps	SE	trap days	SE	SE	SE	SE
Beaver	106	5.8	16.8	2.7	1,968	434	5.1	0.5	6.3	0.9	15.5	2.4	12,758	3,403
Bobcat	32	1.8	27.6	3.9	977	293	8.1	1.3	0.9	0.2	0.4	0.1	7,705	2,428
Coyote	113	6.2	24.9	2.3	3,528	504	10.8	1.1	3.2	0.5	1.5	0.2	46,309	10,189
Gray Fox	35	1.9	32.8	3.8	1,278	369	13.9	2.9	1.2	0.3	0.3	0.1	22,048	8,918
Long-tailed Weasel	4	0.2	16.0	0	57	48	4.0	0	0	0	0	0	227	192
Mink	25	1.4	23.0	3.9	570	195	5.9	0.8	0.1	0.1	0.2	0.1	3,405	1,316
Muskrat	53	2.9	26.1	5.4	1,295	366	5.6	0.7	3.1	1.0	7.1	2.9	6,491	1,755
Nutria	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	25	1.4	33.4	11.0	945	417	7.0	1.3	4.4	2.5	2.7	0.9	6,264	2,936
Otter	32	1.8	30.7	8.0	977	353	9.3	2.3	2.1	0.5	2.3	0.9	6,186	2,487
Raccoon	131	7.2	27.3	3.5	3,861	632	6.6	0.8	7.1	1.2	11.5	2.7	27,495	6,624
Red Fox	110	6.1	29.3	2.9	3,631	558	10.4	1.6	8.6	2.8	3.7	0.5	43,838	12,084
Striped Skunk	11	0.6	24.3	9.7	258	150	7.0	1.8	1.7	1.0	0.5	0.3	2,251	1,324
All Species	216	11.9	25.9	1.2	19,345	3,310	8.3	0.4	5.0	0.6	6.2	0.7	184,976	43,053

<sup>1</sup> the total number of licenses is 1,812

Table 12d. Southern Piedmont region estimates and summary statistics for each furbearer species targeted in 2019-2020.

Species	Est. # trappers that targeted species	% of total licenses <sup>1</sup>	Avg. # days trapped per trapper		Est. total # days trapped		Avg. # traps set per day per trapper		Avg. season harvest per trapper		Avg. harvest per 100 trap days per trapper		Est. total number of trap days	
			SE	trapped	SE	days	SE	traps	SE	harvest	SE	trap days	SE	SE
Beaver	71	3.9	17.7	2.2	1,253	258	5.4	0.9	9.4	3.2	8.7	1.2	7,453	2,094
Bobcat	120	6.6	25.5	3.0	3,164	496	12.3	2.1	1.7	0.3	1.2	0.3	53,089	15,174
Coyote	166	9.2	27.0	3.0	4,771	609	12.2	1.5	3.6	0.6	1.7	0.3	94,879	27,582
Gray Fox	106	5.8	28.5	3.7	3,228	609	10.4	1.3	3.9	0.8	1.7	0.3	50,251	16,250
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mink	14	0.8	22.5	11.0	319	189	5.5	0.9	0	0	0	0	1,996	1,175
Muskrat	25	1.4	16.5	2.4	350	125	6.3	1.3	8.0	3.4	10.7	5.7	2,619	1,203
Nutria	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opossum	21	1.2	17.8	5.1	251	121	11.0	4.4	4.8	1.4	13.7	7.8	3,897	2,314
Otter	46	2.5	21.5	3.8	1,065	281	6.8	1.1	4.1	1.7	3.9	1.1	7,655	2,634
Raccoon	120	6.6	29.9	3.3	4,024	588	12.2	1.4	12.0	2.0	6.8	1.3	64,471	14,736
Red Fox	145	8.0	24.9	2.9	3,787	558	11.2	1.1	3.9	0.7	2.1	0.4	58,504	14,707
Striped Skunk	11	0.6	27.3	2.7	290	141	5.3	1.7	5.0	4.2	1.9	1.6	1,653	931
All Species	209	11.5	25.5	1.2	22,501	3,591	10.6	0.6	5.3	0.5	3.6	0.3	346,467	84,422

<sup>1</sup> the total number of licenses is 1,812

Table 12e. Tidewater region estimates and summary statistics for each furbearer species targeted in 2019-2020.

Species	Est. # trappers that targeted species	% of total licenses <sup>1</sup>	Avg. # days trapped per trapper			Avg. # traps set per day per trapper			Avg. season harvest per trapper			Avg. harvest per 100 trap days per trapper			Est. total number of trap days	
			Est. total # days trapped	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Beaver	120	6.6	15.5	2.1	2,198	377	6.8	0.8	9.6	1.2	16.9	2.3	19,716	6,201		
Bobcat	67	3.7	26.7	4.1	1,702	387	19.8	6.8	2.8	0.6	1.3	0.3	34,272	10,413		
Coyote	117	6.5	28.6	3.2	3,851	585	16.6	3.4	5.5	1.2	2.5	0.7	65,837	13,641		
Gray Fox	64	3.5	24.5	4.0	1,472	359	22.2	7.4	3.5	0.7	1.7	0.5	32,598	11,485		
Long-tailed Weasel	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mink	11	0.6	5.0	2.2	53	32	47.0	31.0	2.7	1.4	8.8	6.8	1,040	574		
Muskrat	57	3.1	11.2	2.3	672	179	21.3	5.8	40.9	14.0	30.0	6.6	24,391	11,072		
Nutria	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Opossum	18	1.0	28.7	12.9	609	451	9.0	3.4	9.2	4.1	5.1	2.9	10,638	8,546		
Otter	46	2.5	18.1	4.8	963	342	7.8	1.2	3.9	0.7	7.0	1.4	11,682	6,004		
Raccoon	103	5.7	20.4	2.9	2,166	518	11.6	1.8	14.4	2.7	10.0	1.7	34,520	12,024		
Red Fox	92	5.1	23.0	3.2	2,035	397	20.2	5.1	10.6	4.2	4.7	1.2	42,515	12,187		
Striped Skunk	4	0.2	14.0	0	50	42	150.0	0	6.0	0	0.3	0	7,432	6,295		
All Species	227	12.5	21.2	1.2	15,770	2,380	15.8	1.5	10.6	1.4	9.3	0.9	284,643	64,403		

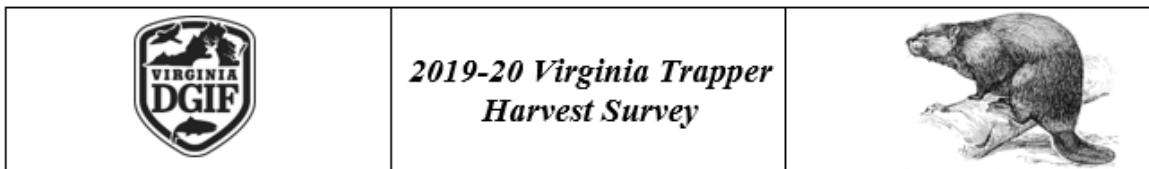
<sup>1</sup> the total number of licenses is 1,812

Table 13. Rare furbearer observations based upon responses to the 2019-2020 Trapper Harvest Survey.

Species	No. observed	No. trapped	List of counties observed <sup>1</sup>	List of counties where trapped
Fisher	3	1	Rockingham, Warren (2)	Rockingham
Spotted Skunk	3	2	Tazewell, indeterminable, Southampton	indeterminable
Least Weasel	3	0	Newport News, Bland, Tazewell	None

<sup>1</sup> county locations are provided where possible and are based on descriptions provided by respondents. Some reports did not specify county, or did not provide sufficient information to determine county.

# Appendix A: Survey Instrument



This is your 2019-2020 Virginia Trapper Harvest Survey. Please complete the survey and return it in the enclosed business reply envelope. Your response is completely confidential and very important. Please send in your response, even if you did not trap this season. If you have any questions or concerns, please contact Furbearer Project Leader Mike Fies at (540) 248-9390 or mike.fies@dgif.virginia.gov.

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**First, did you trap in Virginia between November 15, 2019 and February 29, 2020?**

Yes       No

If **NO**, stop here and return the survey in the postage-paid envelope.

If **YES**, please follow the instructions below and complete the remainder of the survey on the other side of this page.

**Instructions for Completing the Trapping Table:**

1. Please only report information for furbearers trapped during the general trapping season (Nov. 15, 2019 to Feb. 29, 2020). Do not report information for animals trapped under authorization of a Commercial Nuisance Animal Permit or other nuisance animals trapped outside the general season. Also, please do not include live foxes trapped for transport to foxhound training preserves.
2. **For Primary and Secondary Target Species (animals you were targeting when you set the traps):**
  - The **primary target** species is the animal you were most interested in catching in a particular trap set. If you were targeting multiple species with the same trap set (i.e. a dirt hole set for coyotes and foxes), please choose **one** species as your primary target and list the others as **secondary targets**.
  - For each **primary target** species, please circle "P" in the first column and indicate total # of animals trapped, total # of days trapped, and average # of traps set per day in each county. See beaver example for how to report primary target species trapping.
  - For each **secondary target** species, please circle "S" in the first column and list the same information as for target species, including the # of animals trapped, total # of days trapped, and average # of traps set per day in each county. See red fox/gray fox/raccoon example for reporting a trap line with primary and secondary targets.
  - If you were unsuccessful at catching a targeted species, place a "0" for the total # of animals trapped, but still report the total # of days trapped and the average # of traps set per day for that species. See bobcat example for how to report unsuccessful target species trapping.
3. **For Non-Target/Incidental Species (animals you were not intending to capture as either a primary or secondary target):**
  - If you captured non-target/incidental animals, please report the total # of animals trapped, but place a "0" for the total # of days trapped and a "0" for the average # of traps set per day, since these animals were not the target of your traps. See opossum and striped skunk examples for how to report incidentally trapped animals.
4. **For fisher, spotted skunk, and least weasel:**
  - Please indicate if you observed or trapped these species during the past trapping season. If YES, please provide a detailed location where each animal was observed or trapped OR you may contact DGIF Furbearer Project Leader Mike Fies at 540-248-9390 or mike.fies@dgif.virginia.gov to provide specific details.

**PLEASE READ THE INSTRUCTIONS ON THE OPPOSITE SIDE OF THIS PAGE BEFORE COMPLETING THIS SURVEY.**

**Write in the name of each county or city in which you trapped**

	Example	County/City #1		County/City #2		County/City #3	
		Buckingham		Buckingham		Buckingham	
<b>For each species, record whether it was a primary, secondary, or non-target species, total # of animals trapped, total # days trapped, and average # traps set per day (please see instructions on opposite side of page) →</b>							
Beaver	(P) S N	17	15	10	P S N	P S N	P S N
Bobcat	(P) S N	0	7	5	P S N	P S N	P S N
Coyote	P S N				P S N	P S N	P S N
Gray Fox	P (S) N	2	12	8	P S N	P S N	P S N
Red Fox	(P) S N	10	12	8	P S N	P S N	P S N
Mink	P S N				P S N	P S N	P S N
Muskrat	(P) S N	55	30	15	P S N	P S N	P S N
Nutria	P S N				P S N	P S N	P S N
Opposum	P S (N)	25	0	0	P S N	P S N	P S N
Otter	P S N				P S N	P S N	P S N
Raccoon	P (S) N	9	12	8	P S N	P S N	P S N
Striped Skunk	P S (N)	12	0	0	P S N	P S N	P S N
Long-tailed Weasel	P S N				P S N	P S N	P S N

<b>Fisher</b>	<b>Spotted Skunk</b>	<b>Least Weasel</b>
Please indicate if you observed or trapped any of the following species during this past trapping season. If YES, please provide a detailed location where the observation occurred. You may also provide details to DGF Furbearer Project Leader Mike Fies at 540-248-9390 or mike.fies@dfgf.virginia.gov	Did you observe a spotted skunk during the past trapping season? □ Yes □ No	Did you observe a least weasel during the past trapping season? □ Yes □ No
	Did you trap a fisher during the past trapping season? □ Yes □ No	Did you trap a least weasel during the past trapping season? □ Yes □ No
	Detailed location: _____	Detailed location: _____

# Appendix B: Cover Letter (1<sup>st</sup> Mailing)



Matthew Strickler  
*Secretary of Natural Resources*

**COMMONWEALTH of VIRGINIA**  
*Department of Game and Inland Fisheries*

Ryan J. Brown  
*Executive Director*

April 30, 2020

Dear Trapper,

Enclosed you will find the 2019-2020 Virginia Trapper Harvest Survey from the Virginia Department of Game and Inland Fisheries. We would appreciate your cooperation in this voluntary survey designed to provide us with the necessary information to estimate the statewide harvest of furbearers during the 2019-2020 trapping season.

This survey is being sent to a random sample of Virginia licensed trappers. It is important that every recipient send in a response. All information on this survey is **completely confidential**. No personally identifiable information is being collected on the survey so that responses cannot be tied to an individual. A postage-paid envelope (addressed to our survey administrators at Virginia Tech) is enclosed for your convenience in returning the completed questionnaire.

If you have questions or comments about this survey, please feel free to contact Mike Fies, Furbearer Project Leader, via email at [mike.fies@dgif.virginia.gov](mailto:mike.fies@dgif.virginia.gov), phone at (540) 248-9390, or by mail at Virginia Department of Game and Inland Fisheries, P.O. Box 996, Verona, VA 24482.

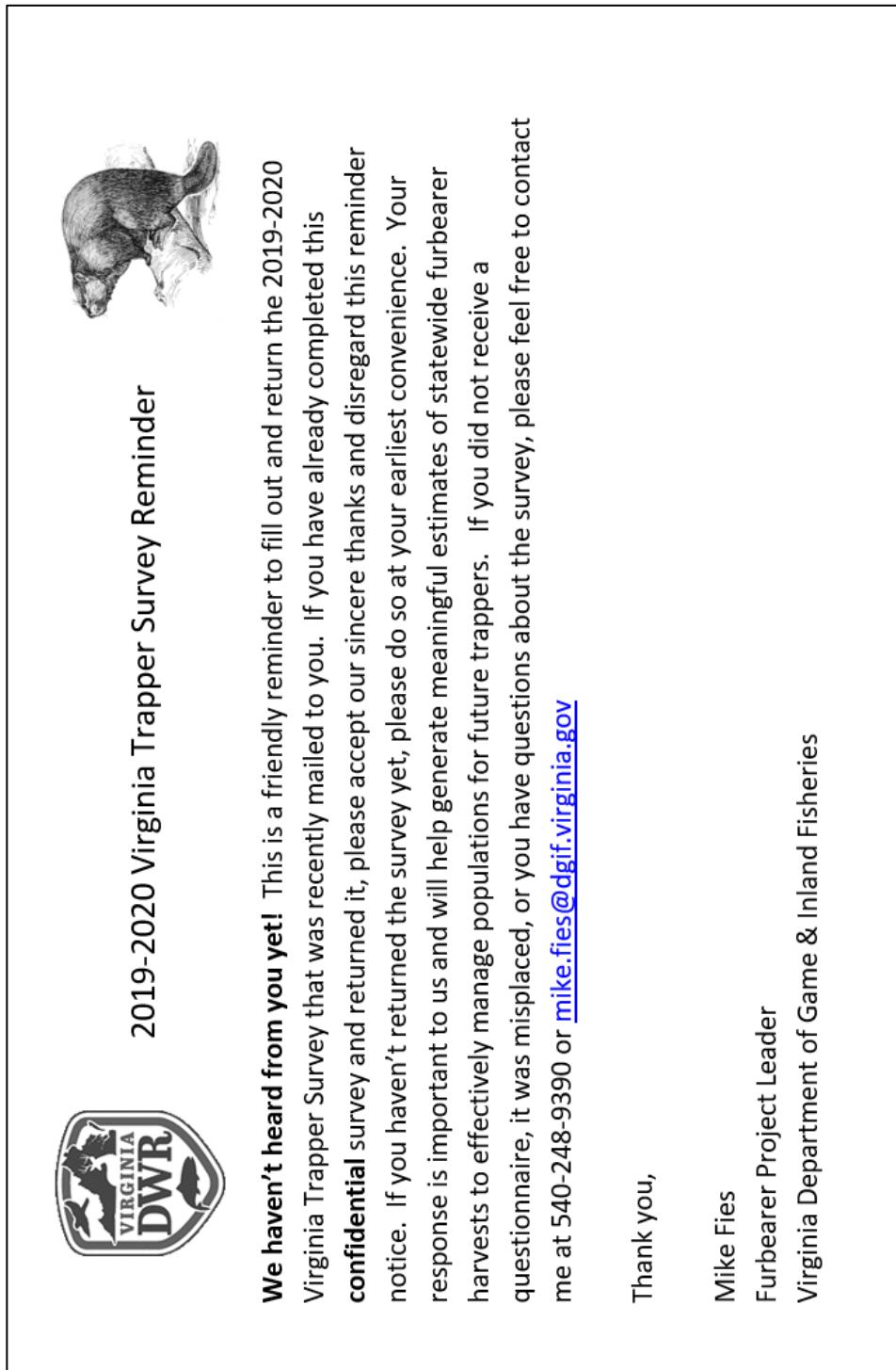
Your assistance in providing trapping harvest information is greatly appreciated and important for effectively managing Virginia's furbearers in the future. Please try to complete and return the questionnaire **within the next 10 days**, if at all possible. Thanks in advance for your cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael L. Fies".

Michael L. Fies  
Furbearer Project Leader  
Virginia Dept. of Game and Inland Fisheries

# Appendix C: Postcard Reminder



## Appendix D: 2019–2020

### Virginia Trapping Season Dates

There is a continuous open season to trap beaver, muskrat, opossum, and raccoon within the incorporated limits of any city or town in the Commonwealth, and in the counties of Arlington, Chesterfield, Fairfax, Henrico, James City, Loudoun, Prince William, Spotsylvania, Stafford, Roanoke, and York.

Species	Start of Season	End of Season
Beaver	December 1 <sup>st</sup>	February 28 <sup>th</sup>
Bobcat	November 15 <sup>th</sup>	February 28 <sup>th</sup>
Coyote	Continuous open season	
Fisher	Continuous <b>closed</b> season	
Fox <sup>1</sup>	November 15 <sup>th</sup>	February 28 <sup>th</sup>
Mink	December 1 <sup>st</sup>	February 28 <sup>th</sup>
Muskrat	December 1 <sup>st</sup>	February 28 <sup>th</sup>
Nutria	Continuous open season	
Opossum	November 15 <sup>th</sup>	February 28 <sup>th</sup>
Otter	December 1 <sup>st</sup>	February 28 <sup>th</sup>
Raccoon	November 15 <sup>th</sup>	February 28 <sup>th</sup>
Striped Skunk	Continuous open season	
Spotted Skunk	Continuous <b>closed</b> season <sup>2</sup>	
Weasel	December 1 <sup>st</sup>	February 28 <sup>th</sup>

<sup>1</sup> Fox trapping is prohibited in Clarke (except on G. Richard Thompson WMA), Fauquier (except on Chester F. Phelps WMA and G. Richard Thompson WMA), Loudoun, and Rappahannock counties.

<sup>2</sup> Spotted skunk and the pelts of spotted skunk may not be sold.

## Appendix E: Map of Trapping Regions in Virginia

