



Oklahoma Department of Wildlife Conservation

Bowhunter Observation Survey

2018-Season

The Oklahoma Department of Wildlife Conservation (ODWC) sought participation from bowhunters for the annual Bowhunter Observation Survey from October 1 to November 31, 2018. The main objectives of this survey were: 1) to provide statewide and regional population indices of furbearers (beaver, bobcat, coyote, otter, red and gray fox, raccoon, and other species as needed), and deer; 2) to develop a long-term database of selected furbearer and deer data for monitoring and evaluating an index of species observation; and 3) to provide an independent supplement to other deer data collected by the ODWC. Bowhunters are ideal for observational-type surveys because they typically spend a large amount of time in stands within the natural environment of many wildlife species.

Invitations to participate in the survey were promoted through ODWC's general e-mail list and social media to identify bowhunters that desired to participate (i.e. voluntary self-selection). Participating bowhunters received an e-mailed participant packet prior to archery season. Instructions on how to participate, a link to an electronic survey form and a printable copy of the survey form were included in the participant packet.

Participants were asked to record their observations while they were in the field during the first two months of Deer Archery Season. The survey period began on the first day of Deer Archery Season (October 1) and concluded November 31, 2018. Participants were able to record observations in any way they preferred—by using the printable survey form, a paper notepad, or an application on their cell phone (e.g. Notes). Regardless of the method chosen, participants were asked to keep in-field records to help minimize recall bias. Participating hunters could submit surveys via an electronic form, or they could record observations and submit surveys using a paper form. Surveys were accepted through December 15, 2018.

Observations were standardized for each of the species to reflect the number of observations per 1,000 hours hunted in each of the 77 counties and statewide. Population indices were calculated by zoogeographic (habitat) regions for furbearers. Year-to-year comparisons were made where appropriate.

The ODWC would like to thank all hunters who participated in the second annual Bowhunter Observation Survey. The amount of data collected by bowhunters could never be duplicated by our biologists, technicians, and game wardens. Participation in this survey plays a critical role in the conservation of these and other wildlife species for the future. We look forward to continuing this partnership with bowhunters each year.

When reviewing the information in the tables that follow, please note that there are many factors that could affect the observability of wildlife, such as population size, habitat, topography, and land use. In some cases, wildlife observations are based off a limited number of observation hours, and/or from a limited number of hunters.

For questions or comments, please contact Jerrod Davis, Furbearer Biologist:
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Hunter Participation

A small number of hunters continue to add their name to the list of survey participants throughout the years. Despite having 2,147 hunters in the participant pool, only 350 submitted a survey form during the 2018 archery season, resulting in a 16% participation rate for the project. Participating hunters submitted a total of 1,940 survey forms, accounting for 7,606 hours of wildlife observation. Hunters averaged 3.9 hours of wildlife observation per survey submission (Table 1). Bowhunter observation surveys were conducted throughout the survey period, with the number of surveys tapering off from the beginning to the end of the season. Peaks in completion of observation surveys can be seen on weekends (Figure 1).

Table 1. Summary statistics for statewide hunter participation in the 2018-season Bowhunter Observation Survey.

<i>Hunters Signed-up</i>	2,147
<i>Hunters Submitting Observations</i>	350 (16% participation rate)
<i>Total Surveys Submitted</i>	1,940
<i>Average Surveys Submitted per Hunter</i>	5.5
<i>Average Observation Hours per submission</i>	3.9
<i>Total Hours of Observation</i>	7,606

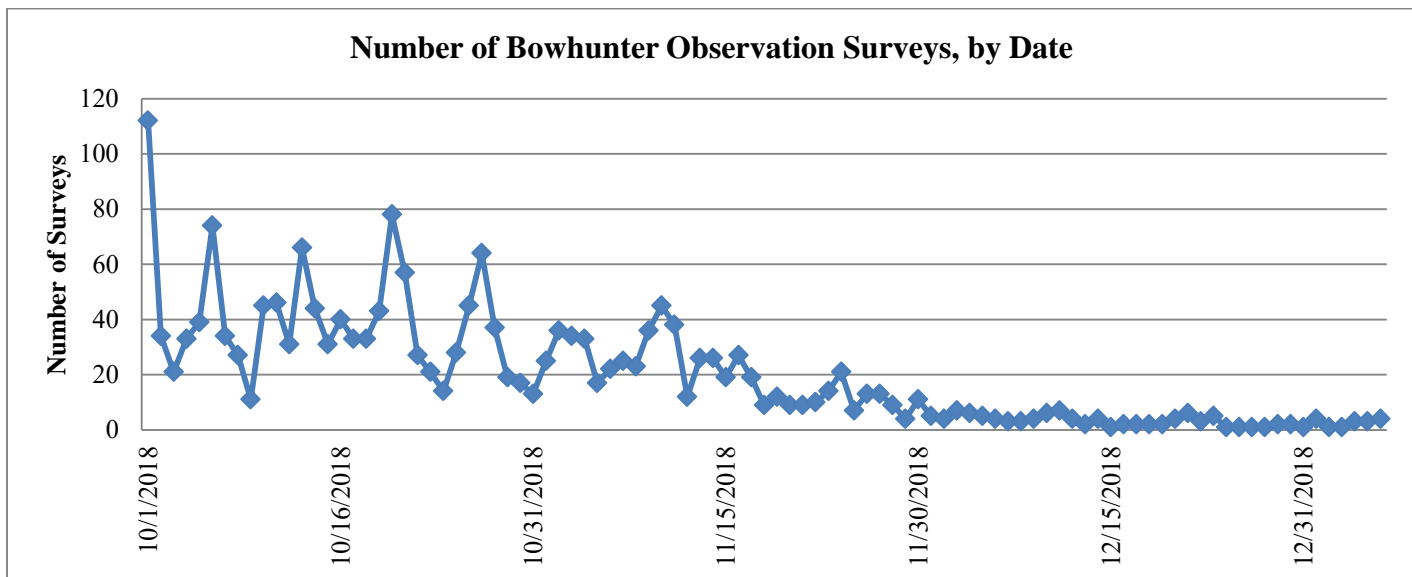


Figure 1. The number of bowhunter observations surveys conducted during the 2018-season, by date.

Table 2. Descriptive statistics for hunter participation in the 2018-season Bowhunter Observation Survey, by county.

County	Total Hours	Average Hours/Submission	Total Submissions
<i>Adair</i>	70	3.68	19
<i>Alfalfa</i>	14	2.80	5
<i>Atoka</i>	153	3.64	42
<i>Beaver</i>	11	3.67	3
<i>Beckham</i>	60	4.00	15
<i>Blaine</i>	24	4.00	6
<i>Bryan</i>	322	4.29	75
<i>Caddo</i>	175	3.80	46
<i>Canadian</i>	17	2.43	7
<i>Carter</i>	137	4.89	28
<i>Cherokee</i>	211	4.91	43
<i>Choctaw</i>	33	3.30	10
<i>Cimarron</i>	11	11.00	1
<i>Cleveland</i>	391	3.72	105
<i>Coal</i>	12	3.00	4
<i>Comanche</i>	113	5.95	19
<i>Cotton</i>	62	3.26	19
<i>Craig</i>	96	4.00	24
<i>Creek</i>	186	3.80	49
<i>Custer</i>	15	3.00	5
<i>Delaware</i>	278	3.92	71
<i>Dewey</i>	98	4.67	21
<i>Ellis</i>	2	2.00	1
<i>Garfield</i>	54	4.15	13
<i>Garvin</i>	229	4.02	57
<i>Grady</i>	43	4.30	10
<i>Grant</i>	183	3.16	58
<i>Greer</i>	94	3.76	25
<i>Harmon</i>	137	3.51	39
<i>Harper</i>	0	0	0
<i>Haskell</i>	9	4.50	2
<i>Hughes</i>	118	5.13	23
<i>Jackson</i>	26	2.36	11
<i>Jefferson</i>	38	3.80	10
<i>Johnston</i>	120	3.16	38
<i>Kay</i>	128	3.05	42
<i>Kingfisher</i>	50	3.57	14
<i>Kiowa</i>	86	5.38	16
<i>Latimer</i>	30	4.29	7
<i>LeFlore</i>	24	4.00	6
<i>Lincoln</i>	78	4.11	19
<i>Logan</i>	209	4.18	50
<i>Love</i>	12	6.00	2
<i>Major</i>	10	2.50	4
<i>Marshall</i>	30	3.00	10
<i>Mayes</i>	86	4.10	21
<i>McClain</i>	76	2.81	27
<i>McCurtain</i>	257	5.35	48

Table 2 Continued.

County	Total Hours	Average Hours/Submission	Total Submissions
<i>McIntosh</i>	31	4.43	7
<i>Murray</i>	11	3.67	3
<i>Muskogee</i>	141	4.27	33
<i>Noble</i>	130	3.10	42
<i>Nowata</i>	3	3.00	1
<i>Okfuskee</i>	75	4.41	17
<i>Oklahoma</i>	115	4.42	26
<i>Okmulgee</i>	204	5.51	37
<i>Osage</i>	419	4.19	100
<i>Ottawa</i>	116	5.27	22
<i>Pawnee</i>	168	2.80	60
<i>Payne</i>	170	5.15	33
<i>Pittsburg</i>	236	4.92	48
<i>Pontotoc</i>	106	3.12	34
<i>Pottawatomie</i>	154	3.35	46
<i>Pushmataha</i>	22	3.67	6
<i>Roger Mills</i>	20	2.50	8
<i>Rogers</i>	180	4.00	45
<i>Seminole</i>	101	3.74	27
<i>Sequoyah</i>	78	3.12	25
<i>Stephens</i>	137	3.19	43
<i>Texas</i>	29	5.80	5
<i>Tillman</i>	24	2.40	10
<i>Tulsa</i>	45	3.00	15
<i>Wagoner</i>	124	3.54	35
<i>Washington</i>	70	3.50	20
<i>Washita</i>	3	3.00	1
<i>Woods</i>	28	4.00	7
<i>Woodward</i>	36	3.27	11

White-tailed Deer

Table 3. Standardized white-tailed deer observations from the 2018-season Bowhunter Observation Survey, statewide and by land type.

	Statewide	Public Land	Private Land
	Observations per 1,000 Hours		
<i>Total deer</i>	904	520	1010
<i>Bucks</i>	252	132	285
<i>Does</i>	415	236	465
<i>Fawns</i>	182	99	205
<i>Unknown</i>	54	54	55

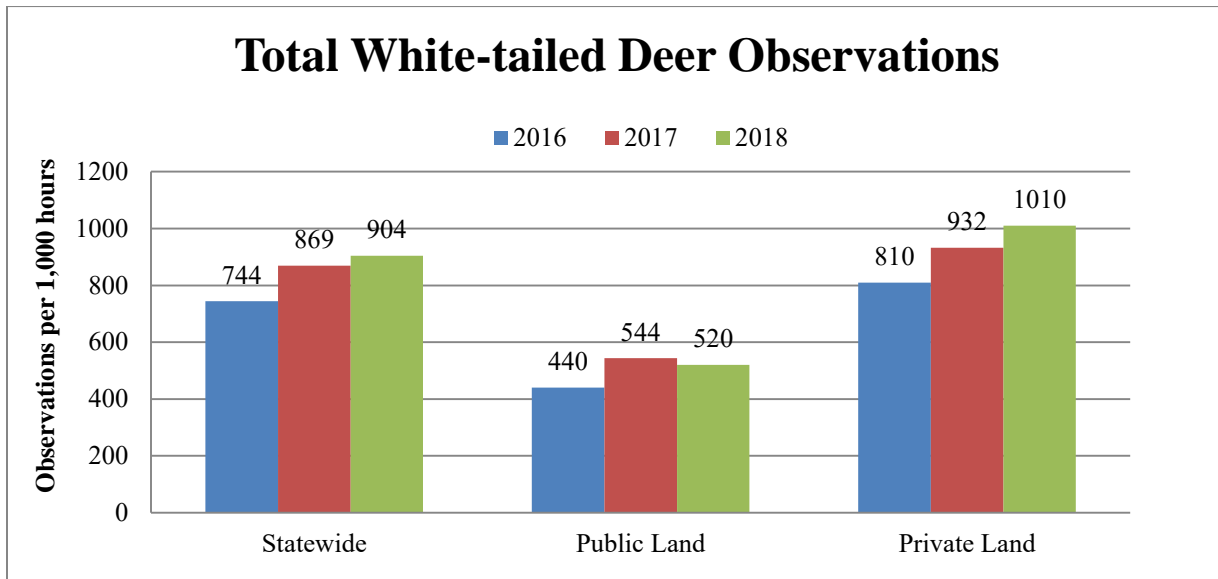


Figure 2. Comparison of standardized white-tailed deer observations from the 2016 to 2018-seasons Bowhunter Observation Survey, statewide and by land type.

Table 4. Standardized white-tailed deer observations from the 2018-season Bowhunter Observation Survey, by county.

County	Bucks	Does	Fawns	Unknown	Total Deer
	Observations per 1,000 hours				
<i>Adair</i>	229	357	143	129	857
<i>Alfalfa</i>	1357	714	71	357	2500
<i>Atoka</i>	222	608	216	13	1059
<i>Beaver</i>	273	273	273	0	818
<i>Beckham</i>	700	650	867	50	2267
<i>Blaine</i>	42	125	42	125	333
<i>Bryan</i>	239	497	171	43	950
<i>Caddo</i>	440	543	280	57	1320
<i>Canadian</i>	235	588	647	118	1588
<i>Carter</i>	102	226	95	36	460
<i>Cherokee</i>	137	308	166	57	668
<i>Choctaw</i>	242	455	91	0	788
<i>Cimarron</i>	0	0	0	0	0
<i>Cleveland</i>	139	192	78	43	452
<i>Coal</i>	750	1833	1167	0	3750
<i>Comanche</i>	212	434	80	53	779
<i>Cotton</i>	274	452	65	0	790
<i>Craig</i>	250	427	427	125	1229
<i>Creek</i>	194	323	81	11	608
<i>Custer</i>	200	600	400	200	1400
<i>Delaware</i>	176	399	187	25	788
<i>Dewey</i>	163	245	153	20	582
<i>Ellis</i>	1500	1000	1000	0	3500
<i>Garfield</i>	56	204	185	0	444
<i>Garvin</i>	310	546	144	13	1013
<i>Grady</i>	326	442	209	0	977
<i>Grant</i>	661	776	383	104	1923
<i>Greer</i>	351	404	191	181	1128
<i>Harmon</i>	562	628	175	255	1620
<i>Harper</i>	0	0	0	0	0
<i>Haskell</i>	111	0	0	0	111
<i>Hughes</i>	322	373	271	127	1093
<i>Jackson</i>	1500	1500	923	0	3923
<i>Jefferson</i>	184	211	105	53	553
<i>Johnston</i>	230	410	33	8	680
<i>Kay</i>	352	383	195	70	1000
<i>Kingfisher</i>	400	860	480	80	1820
<i>Kiowa</i>	488	407	81	0	977
<i>Latimer</i>	267	33	0	0	300
<i>LeFlore</i>	83	83	0	42	208
<i>Lincoln</i>	167	410	179	26	782
<i>Logan</i>	115	206	153	24	498
<i>Love</i>	167	333	0	0	500
<i>Major</i>	0	300	0	0	300
<i>Marshall</i>	233	500	67	33	833
<i>Mayes</i>	151	721	360	58	1291
<i>McClain</i>	421	1250	289	118	2079

Table 4 Continued.

County	Bucks	Does	Fawns	Unknown	Total Deer
	Observations per 1,000 hours				
<i>McCurtain</i>	132	175	78	70	455
<i>McIntosh</i>	65	97	32	0	194
<i>Murray</i>	182	455	182	0	818
<i>Muskogee</i>	85	298	191	78	652
<i>Noble</i>	392	762	438	46	1638
<i>Nowata</i>	333	333	333	0	1000
<i>Okfuskee</i>	147	373	173	53	747
<i>Oklahoma</i>	87	278	96	17	478
<i>Okmulgee</i>	118	221	103	69	510
<i>Osage</i>	252	392	170	40	854
<i>Ottawa</i>	155	138	129	0	422
<i>Pawnee</i>	155	393	131	36	714
<i>Payne</i>	200	371	176	65	812
<i>Pittsburg</i>	275	331	144	102	852
<i>Pontotoc</i>	160	368	113	75	717
<i>Pottawatomie</i>	221	448	149	39	857
<i>Pushmataha</i>	318	773	409	91	1591
<i>Roger Mills</i>	500	400	150	0	1050
<i>Rogers</i>	283	411	261	39	994
<i>Seminole</i>	119	356	198	40	713
<i>Sequoyah</i>	218	256	128	26	628
<i>Stephens</i>	394	708	109	36	1248
<i>Texas</i>	517	586	1034	0	2138
<i>Tillman</i>	333	375	417	375	1500
<i>Tulsa</i>	0	378	133	0	511
<i>Wagoner</i>	258	484	161	81	984
<i>Washington</i>	543	357	100	0	1000
<i>Washita</i>	0	667	0	0	667
<i>Woods</i>	321	500	36	0	857
<i>Woodward</i>	444	1361	250	167	2222

Furbearers

Table 5. Standardized furbearer observations from the 2018-season Bowhunter Observation Survey, statewide and by land type.

Species	Statewide	Public Land	Private Land
	Observations per 1,000 Hours		
<i>Total Furbearers</i>	125	63	143
<i>Red Fox</i>	3	2	3
<i>Opossum</i>	12	4	14
<i>Badger</i>	<1	0	1
<i>River Otter</i>	<1	3	<1
<i>Striped Skunk</i>	7	4	8
<i>Bobcat</i>	11	10	11
<i>Raccoon</i>	50	34	58
<i>Gray Fox</i>	5	1	6
<i>Coyote</i>	36	15	42

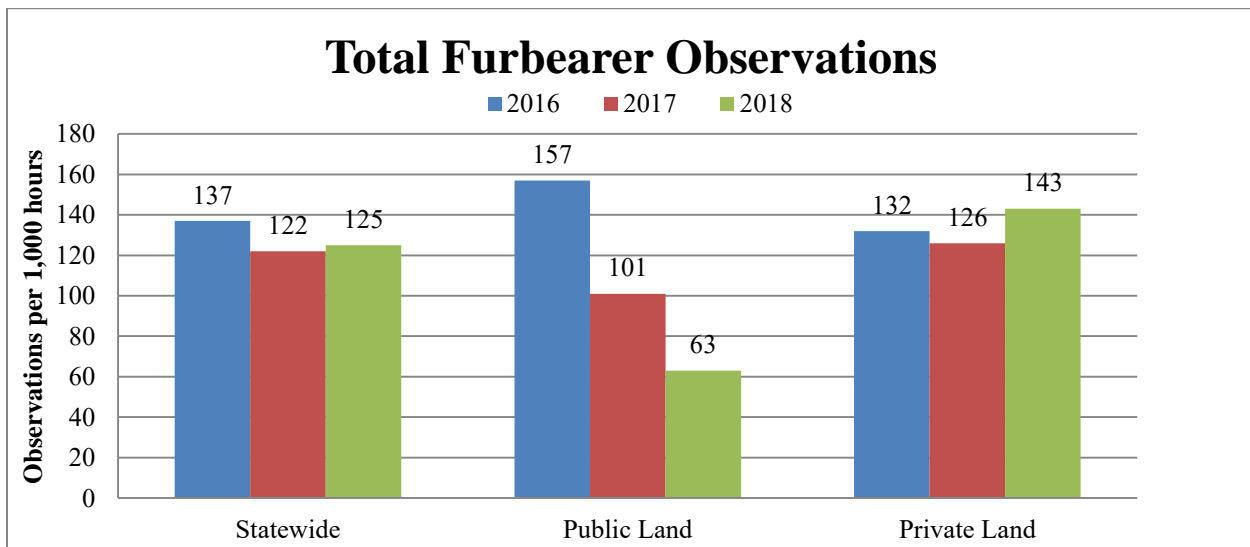


Figure 3. Comparison of standardized furbearer observations from the 2016 to 2018-seasons Bowhunter Observation Survey, statewide and by land type.

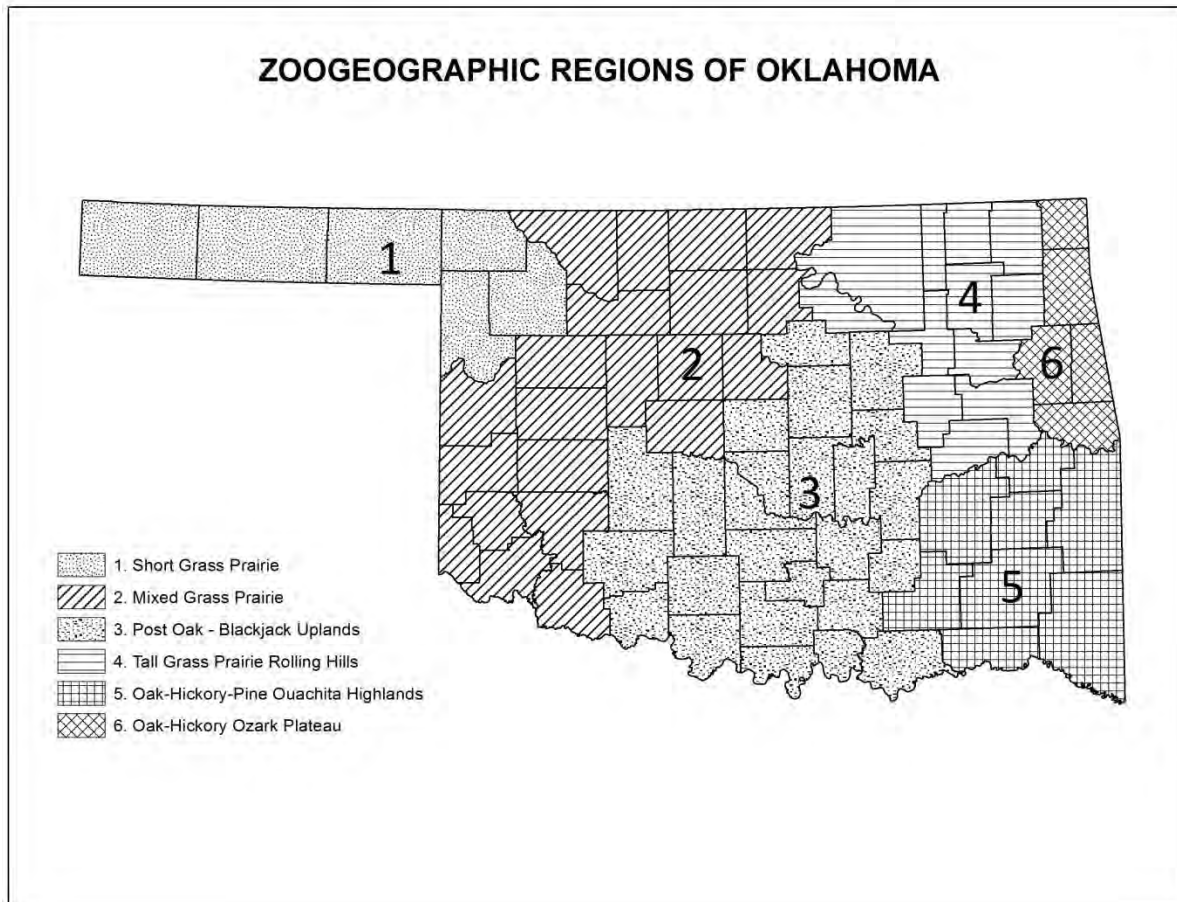


Figure 4. Map of the zoogeographic regions of Oklahoma.

Table 6. Standardized furbearer observations from the 2018-season Bowhunter Observation Survey, by zoogeographic regions.

Zoogeographic Region*	Red Fox	Opossum	Badger	River Otter	Striped Skunk	Bobcat	Raccoon	Gray Fox	Coyote	Total Obs.
	Observations per 1,000 Hours									
1	0	22	0	0	146	0	191	0	124	483
2	5	15	4	0	12	18	92	1	71	218
3	1	11	0	0	6	11	32	7	32	101
4	5	17	0	2	1	13	59	4	25	126
5	3	0	0	4	4	4	29	8	14	65
6	0	8	0	0	0	3	33	3	21	68

*Zoogeographic Regions: 1- Short Grass Prairie; 2 - Mixed Grass Prairie; 3 - Post Oak - Blackjack Uplands; 4 - Tall Grass Prairie Rolling Hills; 5 - Oak-Hickory-Pine Ouachita Highlands; 6 - Oak-Hickory Ozark Plateau

Table 7. Standardized furbearer observations from the 2018-season Bowhunter Observation Survey, by county.

County	Red Fox	Opossum	Badger	River Otter	Striped Skunk	Bobcat	Raccoon	Gray Fox	Coyote	Total Obs.
	Observations per 1,000 Hours									
<i>Adair</i>	0	0	0	0	0	0	71	0	29	100
<i>Alfalfa</i>	0	0	0	0	0	0	71	0	0	71
<i>Atoka</i>	0	0	0	20	7	0	46	0	13	85
<i>Beaver</i>	0	0	0	0	0	0	0	0	0	0
<i>Beckham</i>	0	0	0	0	17	0	167	0	200	383
<i>Blaine</i>	0	42	0	0	83	42	0	0	42	208
<i>Bryan</i>	0	19	0	0	0	6	9	0	53	87
<i>Caddo</i>	0	11	0	0	0	0	23	0	17	51
<i>Canadian</i>	0	118	0	0	0	0	176	0	59	353
<i>Carter</i>	0	22	0	0	0	29	80	0	88	219
<i>Cherokee</i>	0	0	0	0	0	5	47	0	19	71
<i>Choctaw</i>	0	0	0	0	0	0	91	0	0	91
<i>Cimarron</i>	0	0	0	0	0	0	0	0	273	273
<i>Cleveland</i>	0	15	0	0	20	8	56	13	8	119
<i>Coal</i>	0	0	0	0	0	0	0	0	0	0
<i>Comanche</i>	0	0	0	0	27	0	9	0	62	97
<i>Cotton</i>	0	0	0	0	0	16	145	0	81	242
<i>Craig</i>	0	42	0	0	0	0	73	0	10	125
<i>Creek</i>	0	16	0	0	0	5	16	65	22	124
<i>Custer</i>	0	0	0	0	0	0	0	0	0	0
<i>Delaware</i>	0	4	0	0	0	4	22	0	11	40
<i>Dewey</i>	0	20	0	0	0	10	173	0	61	265
<i>Ellis</i>	0	0	0	0	0	0	0	0	0	0
<i>Garfield</i>	0	0	0	0	19	0	74	19	37	148
<i>Garvin</i>	0	4	0	0	0	26	31	0	31	92
<i>Grady</i>	0	0	0	0	0	0	93	0	47	140
<i>Grant</i>	0	27	0	0	44	11	55	0	38	175
<i>Greer</i>	43	0	0	0	0	0	0	0	117	160
<i>Harmon</i>	0	0	0	0	7	15	44	0	51	117
<i>Harper</i>										
<i>Haskell</i>	0	0	0	0	0	0	0	0	0	0
<i>Hughes</i>	0	59	0	0	0	42	59	17	34	212
<i>Jackson</i>	0	0	0	0	38	38	308	0	154	538
<i>Jefferson</i>	0	0	0	0	0	26	0	0	0	26
<i>Johnston</i>	0	0	0	0	8	16	57	0	8	90
<i>Kay</i>	8	63	31	0	0	31	250	0	156	539
<i>Kingfisher</i>	0	20	40	0	40	40	80	0	60	280
<i>Kiowa</i>	0	12	0	0	0	58	70	0	151	291
<i>Latimer</i>	0	0	0	0	0	0	0	0	0	0
<i>LeFlore</i>	0	0	0	0	0	0	0	0	0	0
<i>Lincoln</i>	0	0	0	0	0	0	0	0	13	13
<i>Logan</i>	0	0	0	0	0	5	24	0	0	29

Table 7 Continued.

County	Red Fox	Opossum	Badger	River Otter	Striped Skunk	Bobcat	Raccoon	Gray Fox	Coyote	Total Obs.
Observations per 1,000 Hours										
<i>Love</i>	0	0	0	0	0	0	0	0	0	0
<i>Major</i>	0	0	0	0	0	0	0	0	0	0
<i>Marshall</i>	100	0	0	0	0	33	33	0	0	167
<i>Mayes</i>	12	128	0	0	0	0	70	0	12	221
<i>McClain</i>	0	0	0	0	26	26	26	0	92	171
<i>McCurtain</i>	0	0	0	0	8	0	31	0	12	51
<i>McIntosh</i>	0	0	0	0	0	0	0	0	0	0
<i>Murray</i>	0	0	0	0	0	0	91	0	0	91
<i>Muskogee</i>	0	0	0	0	0	0	0	0	0	0
<i>Noble</i>	15	8	0	0	0	23	62	0	38	146
<i>Nowata</i>	0	0	0	0	0	0	0	0	0	0
<i>Okfuskee</i>	0	0	0	0	13	13	13	0	53	93
<i>Oklahoma</i>	0	0	0	0	0	17	9	0	0	26
<i>Okmulgee</i>	0	10	0	15	10	20	29	0	15	98
<i>Osage</i>	2	9	0	0	0	12	83	0	38	144
<i>Ottawa</i>	0	9	0	0	0	0	0	0	34	43
<i>Pawnee</i>	0	6	0	0	0	12	18	0	30	65
<i>Payne</i>	6	18	0	0	24	12	6	12	12	88
<i>Pittsburg</i>	8	0	0	0	0	8	17	25	13	72
<i>Pontotoc</i>	0	19	0	0	0	0	9	0	28	57
<i>Pottawatomie</i>	0	0	0	0	0	0	32	0	45	78
<i>Pushmataha</i>	0	0	0	0	0	45	0	0	136	182
<i>Roger Mills</i>	0	0	0	0	0	0	0	0	300	300
<i>Rogers</i>	17	22	0	0	0	28	100	33	33	233
<i>Seminole</i>	0	10	0	0	0	0	10	0	40	59
<i>Sequoyah</i>	0	51	0	0	0	0	51	26	38	167
<i>Stephens</i>	0	0	0	0	0	0	29	0	29	58
<i>Texas</i>	0	0	0	0	448	0	586	0	276	1310
<i>Tillman</i>	0	0	0	0	42	42	375	0	42	500
<i>Tulsa</i>	0	22	0	0	0	0	111	0	44	178
<i>Wagoner</i>	0	0	0	0	0	32	24	0	8	65
<i>Washington</i>	43	0	0	0	0	0	129	14	57	243
<i>Washita</i>	0	0	0	0	0	333	0	0	0	333
<i>Woods</i>	0	0	0	0	0	36	250	0	36	321
<i>Woodward</i>	0	56	0	0	0	0	0	0	0	56

Other Species

In addition to the species listed in Table 8, bowhunters reported observations for several additional species that were not listed on the form. These include a variety of bird species, mountain lions, pronghorns, chipmunks, rabbits, armadillos, snakes, prairie dogs, beavers, bats, and porcupines.

Table 8. Standardized wildlife observations from the 2018-season Bowhunter Observation Survey, statewide and by land type.

	Statewide	Public Land	Private Land
	Observations per 1,000 Hours		
<i>Black Bear (adult)</i>	2	1	2
<i>Black Bear (cub)</i>	2	0	2
<i>Elk (antlered)</i>	3	5	3
<i>Elk (antlerless)</i>	6	7	5
<i>Elk (calf)</i>	2	4	2
<i>Turkey (bearded)</i>	48	23	55
<i>Turkey (not bearded)</i>	57	27	66
<i>Turkey (unknown)</i>	27	35	25
<i>Gray Squirrel</i>	167	246	145
<i>Fox Squirrel</i>	184	195	181
<i>Quail</i>	41	42	41
<i>Feral Swine</i>	37	54	32
<i>House Cat</i>	1	0	1
<i>Domestic Dog</i>	12	10	13