



Oklahoma Department of Wildlife Conservation

# Bowhunter Observation Survey

2019-Season

The Oklahoma Department of Wildlife Conservation (ODWC) sought participation from bowhunters for the annual Bowhunter Observation Survey from October 1 to November 30, 2019. 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 30, 2019. However, due to declining participation, we allowed participants to submit observation data outside of this period. 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.

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.**

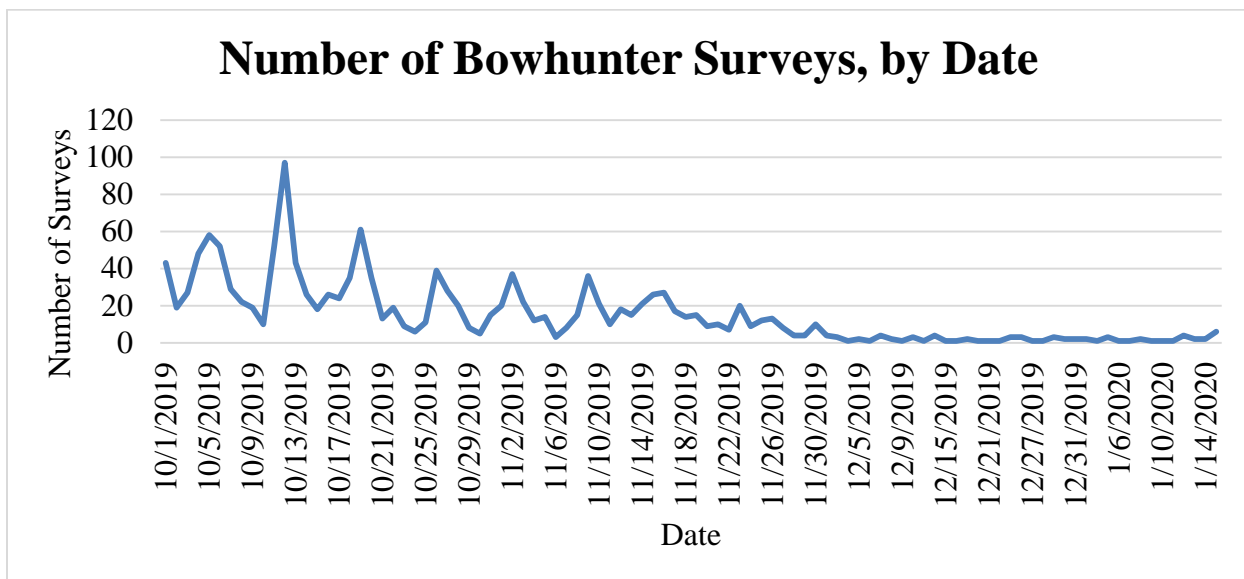
For questions or comments, please contact Jerrod Davis, Furbearer Biologist:  
jerrod.davis@odwc.ok.gov

## Hunter Participation

A small number of hunters continue to add their name to the list of survey participants throughout the year. Despite having 2,179 hunters in the participant pool, only 249 submitted a survey form during the 2019 archery season, resulting in a 11% participation rate for the project. Participating hunters submitted a total of 1,453 survey forms, accounting for 5,667 hours of wildlife observation. Hunters averaged 3.9 hours of wildlife observation per survey submission (Table 1). Bowhunter observation surveys were conducted throughout the two-month 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 2019-season Bowhunter Observation Survey.

<i>Hunters Signed-up</i>	2,179
<i>Hunters Submitting Observations</i>	249 (11% participation rate)
<i>Total Surveys Submitted</i>	1,453
<i>Average Surveys Submitted per Hunter</i>	5.8
<i>Average Observation Hours per submission</i>	3.9
<i>Total Hours of Observation</i>	5,667



**Figure 1.** The number of bowhunter observations surveys conducted during the 2019-season, by date.

**Table 2.** Descriptive statistics for hunter participation in the 2019-season Bowhunter Observation Survey, by county.

<b>County</b>	<b>Total Hours</b>	<b>Average Hours/Submission</b>	<b>Total Submissions</b>
<i>Adair</i>	20	3.33	6
<i>Alfalfa</i>	28	3.50	8
<i>Atoka</i>	143	4.77	30
<i>Beaver</i>	12	6.00	2
<i>Beckham</i>	62	2.58	24
<i>Blaine</i>	97	5.11	19
<i>Bryan</i>	252	4.20	60
<i>Caddo</i>	212	3.85	55
<i>Canadian</i>	20	3.33	6
<i>Carter</i>	74	5.69	13
<i>Cherokee</i>	91	4.55	20
<i>Cimarron</i>	34	8.50	4
<i>Cleveland</i>	296	3.48	85
<i>Coal</i>	101	6.73	15
<i>Comanche</i>	30	7.50	4
<i>Craig</i>	16	5.33	3
<i>Creek</i>	114	3.93	29
<i>Custer</i>	67	3.53	19
<i>Delaware</i>	78	3.71	21
<i>Dewey</i>	34	5.67	6
<i>Garfield</i>	26	2.17	12
<i>Garvin</i>	36	2.57	14
<i>Grady</i>	27	4.50	6
<i>Grant</i>	147	3.00	49
<i>Greer</i>	31	3.88	8
<i>Harmon</i>	126	3.94	32
<i>Haskell</i>	47	4.70	10
<i>Hughes</i>	116	3.87	30
<i>Jackson</i>	16	2.00	8
<i>Jefferson</i>	4	4.00	1
<i>Johnston</i>	253	4.15	61
<i>Kay</i>	85	3.27	26
<i>Kingfisher</i>	42	4.20	10
<i>Kiowa</i>	8	2.67	3
<i>Latimer</i>	7	3.50	2
<i>LeFlore</i>	71	4.44	16
<i>Lincoln</i>	38	3.80	10
<i>Logan</i>	138	3.73	37
<i>Love</i>	25	4.17	6
<i>Marshall</i>	10	3.33	3
<i>Mayes</i>	203	3.90	52
<i>McClain</i>	16	3.20	5
<i>McCurtain</i>	150	3.95	38
<i>McIntosh</i>	12	4.00	3
<i>Murray</i>	18	6.00	3
<i>Muskogee</i>	126	3.07	41
<i>Noble</i>	37	3.08	12

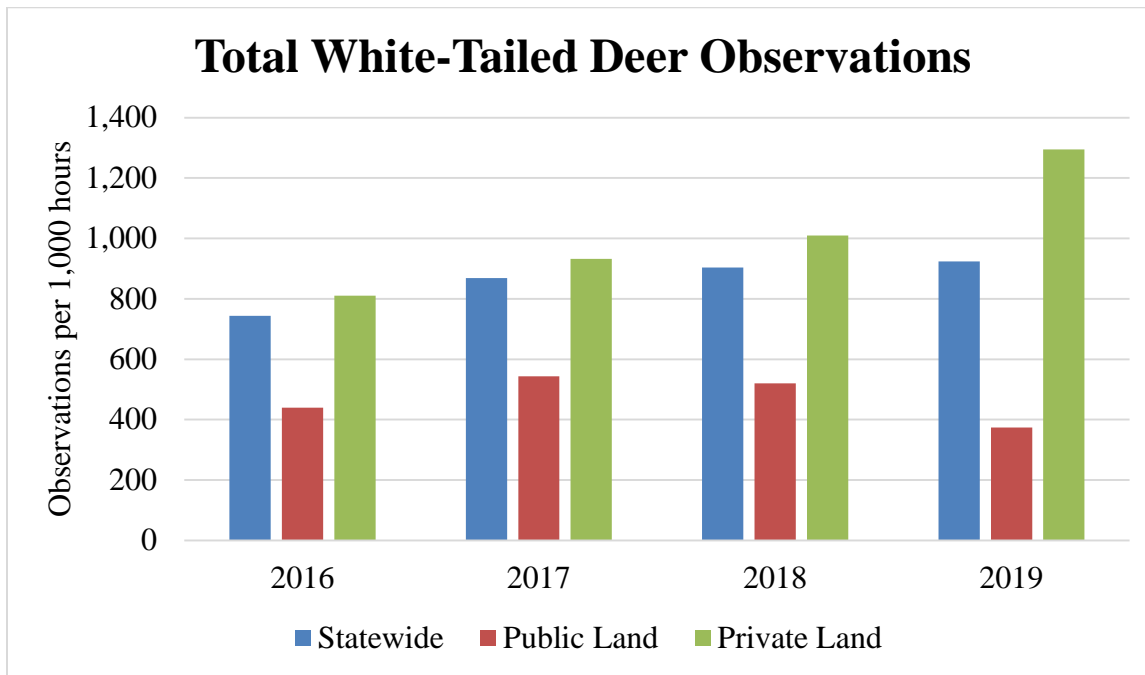
**Table 2** Continued.

<b>County</b>	<b>Total Hours</b>	<b>Average Hours/Submission</b>	<b>Total Submissions</b>
<i>Nowata</i>	79	3.43	23
<i>Okfuskee</i>	73	6.08	12
<i>Oklahoma</i>	70	3.04	23
<i>Okmulgee</i>	117	6.16	19
<i>Osage</i>	319	4.09	78
<i>Ottawa</i>	79	3.76	21
<i>Pawnee</i>	123	2.37	52
<i>Payne</i>	68	6.80	10
<i>Pittsburg</i>	160	5.71	28
<i>Pontotoc</i>	103	3.55	29
<i>Pottawatomie</i>	143	3.97	36
<i>Pushmataha</i>	64	5.33	12
<i>Roger Mills</i>	21	2.10	10
<i>Rogers</i>	39	3.25	12
<i>Seminole</i>	43	4.30	10
<i>Sequoyah</i>	63	6.30	10
<i>Stephens</i>	106	3.03	35
<i>Texas</i>	141	4.55	31
<i>Tulsa</i>	29	3.22	9
<i>Wagoner</i>	47	2.94	16
<i>Washington</i>	84	4.67	18
<i>Washita</i>	2	2.00	1
<i>Woods</i>	47	3.36	14
<i>Woodward</i>	51	3.19	16

## White-tailed Deer

**Table 3.** Standardized white-tailed deer observations from the 2019-season Bowhunter Observation Survey, statewide and by land type.

	Statewide	Public Land	Private Land
	Observations per 1,000 Hours		
<i>Total deer</i>	924	375	1295
<i>Bucks</i>	656	106	550
<i>Does</i>	119	119	595
<i>Fawns</i>	82	82	82
<i>Unknown</i>	68	68	68



**Figure 2.** Comparison of standardized white-tailed deer observations from the 2016 -2019 seasons Bowhunter Observation Survey, statewide and by land type.

**Table 4.** Standardized white-tailed deer observations from the 2019-season Bowhunter Observation Survey, by county.

<b>County</b>	<b>Bucks</b>	<b>Does</b>	<b>Fawns</b>	<b>Unknown</b>	<b>Total Deer</b>
	<b>Observations per 1,000 hours</b>				
<i>Adair</i>	300	150	150	100	700
<i>Alfalfa</i>	214	250	143	36	643
<i>Atoka</i>	147	182	140	98	566
<i>Beaver</i>	167	167	167	167	667
<i>Beckham</i>	355	339	242	210	1145
<i>Blaine</i>	113	93	21	10	237
<i>Bryan</i>	139	147	87	56	429
<i>Caddo</i>	208	222	184	142	755
<i>Canadian</i>	250	300	250	0	800
<i>Carter</i>	122	135	135	81	473
<i>Cherokee</i>	110	110	99	99	418
<i>Cimarron</i>	59	118	59	59	294
<i>Cleveland</i>	105	128	115	54	402
<i>Coal</i>	59	79	59	40	238
<i>Comanche</i>	133	133	133	100	500
<i>Craig</i>	188	188	125	188	688
<i>Creek</i>	149	167	114	70	500
<i>Custer</i>	194	194	194	75	657
<i>Delaware</i>	51	128	77	38	295
<i>Dewey</i>	176	147	147	59	529
<i>Garfield</i>	308	192	77	77	654
<i>Garvin</i>	250	250	222	139	861
<i>Grady</i>	185	222	185	148	741
<i>Grant</i>	238	293	238	34	803
<i>Greer</i>	194	32	65	65	355
<i>Harmon</i>	143	159	87	48	437
<i>Haskell</i>	85	149	64	64	362
<i>Hughes</i>	86	207	138	17	448
<i>Jackson</i>	500	500	500	500	2000
<i>Jefferson</i>	250	250	250	0	750
<i>Johnston</i>	126	111	83	95	415
<i>Kay</i>	282	247	247	247	1024
<i>Kingfisher</i>	190	167	167	119	643
<i>Kiowa</i>	375	250	0	0	625
<i>Latimer</i>	143	143	143	143	571
<i>LeFlore</i>	127	141	127	56	451
<i>Lincoln</i>	211	132	79	0	421
<i>Logan</i>	159	188	123	43	514
<i>Love</i>	40	120	0	0	160
<i>Marshall</i>	300	300	300	200	1100
<i>Mayer</i>	99	133	94	69	394
<i>McClain</i>	313	313	313	313	1250

**Table 4** Continued.

	<b>Bucks</b>	<b>Does</b>	<b>Fawns</b>	<b>Unknown</b>	<b>Total Deer</b>
<b>County</b>	<b>Observations per 1,000 hours</b>				
<i>McCurtain</i>	127	133	100	33	393
<i>McIntosh</i>	83	167	83	167	500
<i>Murray</i>	111	167	56	56	389
<i>Muskogee</i>	175	167	63	87	492
<i>Noble</i>	270	162	162	0	595
<i>Nowata</i>	190	241	114	114	658
<i>Okfuskee</i>	123	123	110	96	452
<i>Oklahoma</i>	86	129	71	71	357
<i>Okmulgee</i>	103	85	94	51	333
<i>Osage</i>	119	144	63	38	364
<i>Ottawa</i>	76	114	38	38	266
<i>Pawnee</i>	220	268	244	171	902
<i>Payne</i>	103	118	103	44	368
<i>Pittsburg</i>	125	138	106	88	456
<i>Pontotoc</i>	107	78	49	39	272
<i>Pottawatomie</i>	154	175	98	49	476
<i>Pushmataha</i>	94	94	16	0	203
<i>Roger Mills</i>	190	381	333	48	952
<i>Rogers</i>	179	205	103	51	538
<i>Seminole</i>	140	70	47	23	279
<i>Sequoyah</i>	111	95	63	32	302
<i>Stephens</i>	208	198	123	132	660
<i>Texas</i>	199	184	170	78	631
<i>Tulsa</i>	172	138	103	103	517
<i>Wagoner</i>	234	255	213	149	851
<i>Washington</i>	83	119	36	36	274
<i>Washita</i>	500	500	500	0	1500
<i>Woods</i>	234	255	234	21	745
<i>Woodward</i>	196	275	235	137	843



## Furbearers

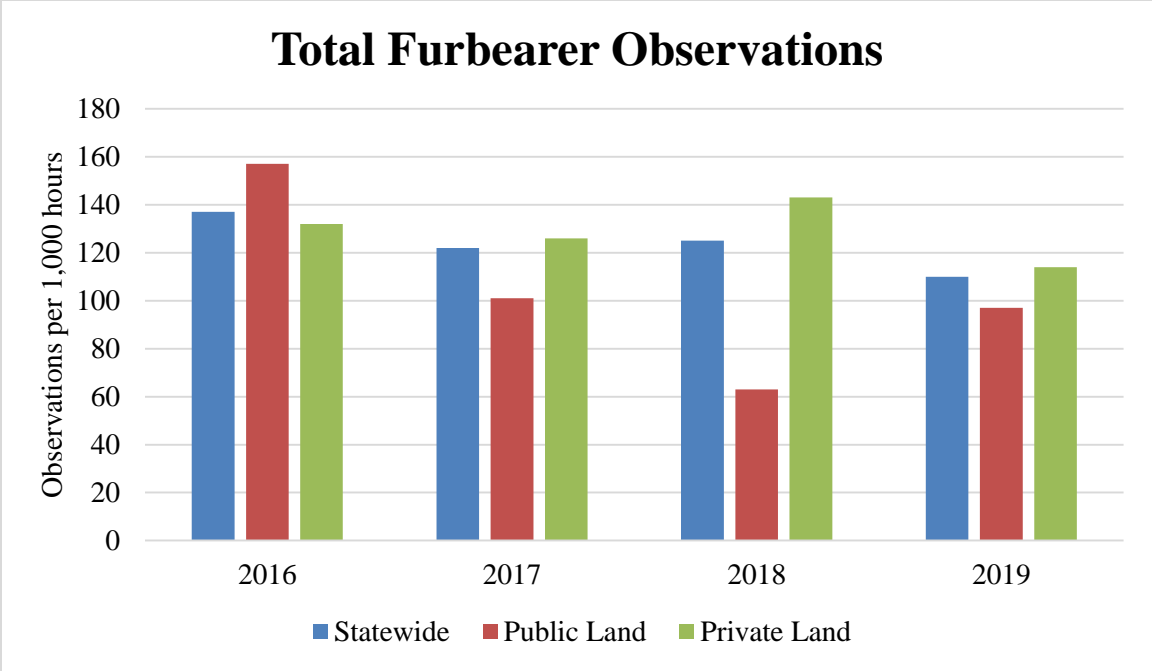
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**Table 5.** Standardized furbearer observations from the 2019-season Bowhunter Observation Survey, statewide and by land type.

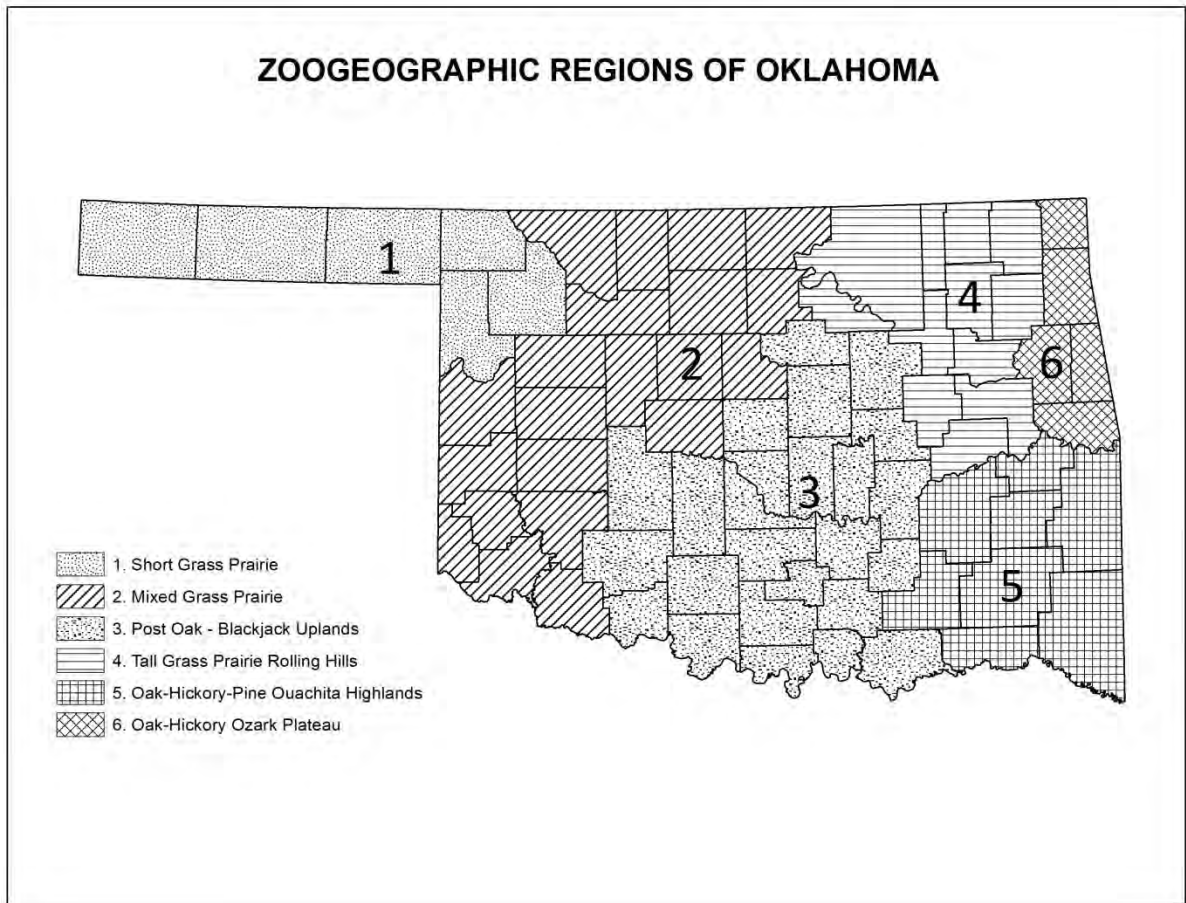
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Species	Statewide	Public Land	Private Land
	Observations per 1,000 Hours		
<i>Total Furbearers</i>	110	97	114
<i>Red Fox</i>	1.4	0.7	1.6
<i>Opossum</i>	11	12	11
<i>Badger</i>	1	0	1.4
<i>River Otter</i>	3	2.5	3
<i>Striped Skunk</i>	5	5	5
<i>Bobcat</i>	8	7	8.5
<i>Raccoon</i>	41	36	42
<i>Gray Fox</i>	3.5	7	2
<i>Coyote</i>	37	38	40

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**Figure 3.** Comparison of standardized furbearer observations from the 2016-2019 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 2019-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	13	0	13	0	25	0	38	0	168	256
2	2	16	3	0	11	18	68	0	55	173
3	0	7	0	0	3	6	22	3	19	61
4	1	19	0	13	3	5	53	3	38	134
5	0	2	0	0	0	5	19	14	19	58
6	6	18	0	0	3	9	82	0	39	157

\*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 2019-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	50	0	0	0	50
<i>Alfalfa</i>	0	0	0	0	0	0	214	0	0	214
<i>Atoka</i>	0	0	0	0	0	21	49	0	35	105
<i>Beaver</i>	0	0	0	0	83	0	417	0	167	667
<i>Beckham</i>	0	0	0	0	0	0	16	0	0	16
<i>Blaine</i>	0	10	0	0	0	10	103	0	10	134
<i>Bryan</i>	0	0	0	0	0	4	20	0	12	36
<i>Caddo</i>	0	0	0	0	0	5	57	0	38	99
<i>Canadian</i>	0	0	0	0	0	0	0	0	0	0
<i>Carter</i>	0	0	0	0	0	0	27	0	41	68
<i>Cherokee</i>	11	11	0	0	0	11	33	0	22	88
<i>Choctaw</i>										
<i>Cimarron</i>	59	0	59	0	59	0	59	0	353	588
<i>Cleveland</i>	0	20	0	0	17	10	14	0	14	74
<i>Coal</i>	0	0	0	0	0	0	20	0	10	30
<i>Comanche</i>	0	0	0	0	0	33	0	0	0	33
<i>Cotton</i>										
<i>Craig</i>	0	0	0	0	0	0	0	0	250	250
<i>Creek</i>	0	9	0	0	0	0	35	0	9	53
<i>Custer</i>	0	0	0	0	15	0	30	0	15	60
<i>Delaware</i>	13	13	0	0	0	0	154	0	64	244
<i>Dewey</i>	0	29	0	0	0	0	147	0	118	294
<i>Ellis</i>										
<i>Garfield</i>	0	0	0	0	0	38	0	0	0	38
<i>Garvin</i>	0	0	0	0	0	0	0	0	56	56
<i>Grady</i>	0	0	0	0	0	0	0	0	74	74
<i>Grant</i>	7	20	7	0	27	0	88	0	34	184
<i>Greer</i>	0	0	0	0	0	0	0	0	0	0
<i>Harmon</i>	0	0	0	0	0	16	0	0	48	63
<i>Harper</i>										
<i>Haskell</i>	0	0	0	0	0	0	0	0	43	43
<i>Hughes</i>	0	0	0	0	0	0	0	0	0	0
<i>Jackson</i>	0	0	0	0	0	63	0	0	0	63
<i>Jefferson</i>	0	0	0	0	0	0	0	0	0	0
<i>Johnston</i>	0	8	0	0	0	8	20	0	8	43
<i>Kay</i>	12	129	12	0	0	94	200	0	271	718
<i>Kingfisher</i>	0	0	0	0	0	24	286	0	71	381
<i>Kiowa</i>	0	0	0	0	0	0	0	0	125	125
<i>Latimer</i>	0	0	0	0	0	0	0	0	0	0
<i>LeFlore</i>	0	0	0	0	0	0	0	113	56	169
<i>Lincoln</i>	0	53	0	0	0	0	0	0	26	79

**Table 7** Continued.

<b>County</b>	<b>Red Fox</b>	<b>Opossum</b>	<b>Badger</b>	<b>River Otter</b>	<b>Striped Skunk</b>	<b>Bobcat</b>	<b>Raccoon</b>	<b>Gray Fox</b>	<b>Coyote</b>	<b>Total Obs.</b>
<b>Observations per 1,000 Hours</b>										
<i>Logan</i>	0	0	0	0	7	7	0	0	36	51
<i>Love</i>	0	0	0	0	0	40	0	0	0	40
<i>Major</i>										
<i>Marshall</i>	0	0	0	0	0	0	0	0	0	0
<i>Mayes</i>	0	15	0	0	5	0	64	0	10	94
<i>McClain</i>	0	0	0	0	0	63	0	0	0	63
<i>McCurtain</i>	0	0	0	0	0	0	27	7	0	33
<i>McIntosh</i>	0	0	0	0	0	0	0	0	83	83
<i>Murray</i>	0	0	0	0	0	0	0	0	0	0
<i>Muskogee</i>	0	8	0	24	0	0	0	8	48	87
<i>Noble</i>	0	27	0	0	0	81	27	0	0	135
<i>Nowata</i>	0	13	0	0	0	0	63	0	63	139
<i>Okfuskee</i>	0	0	0	0	27	0	14	55	82	178
<i>Oklahoma</i>	0	0	0	0	0	0	14	0	0	14
<i>Okmulgee</i>	0	43	0	111	9	0	137	0	77	376
<i>Osage</i>	3	25	0	0	0	6	47	3	28	113
<i>Ottawa</i>	0	38	0	0	13	13	101	0	51	215
<i>Pawnee</i>	0	16	0	0	0	24	0	0	49	89
<i>Payne</i>	0	15	0	0	0	15	15	0	0	44
<i>Pittsburg</i>	0	6	0	0	0	0	6	0	6	19
<i>Pontotoc</i>	0	19	0	0	0	0	19	0	0	39
<i>Pottawatomie</i>	0	7	0	0	0	14	42	21	35	119
<i>Pushmataha</i>	0	0	0	0	0	0	0	0	0	0
<i>Roger Mills</i>	0	0	0	0	238	48	48	0	143	476
<i>Rogers</i>	0	0	0	0	0	26	77	26	26	154
<i>Seminole</i>	0	0	0	0	0	0	93	0	70	163
<i>Sequoyah</i>	0	16	0	0	0	0	63	0	32	111
<i>Stephens</i>	0	0	0	0	0	9	9	0	19	38
<i>Texas</i>	7	0	7	0	21	0	0	0	177	213
<i>Tillman</i>										
<i>Tulsa</i>	0	0	0	0	0	0	138	0	0	138
<i>Wagoner</i>	0	21	0	0	21	0	106	0	0	149
<i>Washington</i>	0	24	0	0	0	0	24	0	24	71
<i>Washita</i>	0	0	0	0	0	0	0	0	0	0
<i>Woods</i>	0	0	21	0	0	0	43	0	106	170