

2015 Spotlight Survey

Wildlife Diversity Program Note #15-1

METHODS

The spotlight survey was initiated in 1981, and has been conducted annually since that time. Observers drive slowly (10–15 mph) on public roads, using 100,000-candlepower spotlights to detect animals by seeing their entire bodies or light reflected from their eyes. Sampling begins an hour after sunset. Most routes are 25 miles in length.

Sampling is phased in from Illinois' southernmost counties (21 March to 4 April) to the northernmost (11–25 April) to account for differences in phenology. Ideally, routes are sampled when relative humidity is $\geq 60\%$, air temperature is $> 32^\circ\text{F}$, and rain or heavy fog is absent (Rybarczyk 1978).

RESULTS

During 2015, staff sampled 1002.2 miles and observed 7,125 animals on 41 routes (Table 1). Animals observed in addition to target species included 31 coyotes, 2 bobcats, 1 beaver, and 1 mink. Staff also recorded 10 foxes; in some cases, species could not be determined.

The number of raccoons observed per mile on 39 routes sampled during both 2014 and 2015 increased 6.5% (Table 2). Indices varied from 0.16–2.96 raccoons per mile for individual routes (Table 3). Long-term (1981–2013) indices correlated negatively with harvest levels during the preceding season ($r = -0.659$; $p < 0.01$).

DISCUSSION

Spotlight surveys are useful for monitoring relative abundance of the raccoon at large spatial scales, particularly over multiple years (Gehrt et al. 2002). In recent years, the statewide spotlight index was 2–3 times greater than when surveys started in 1981, and 10–30% less than its peak in 1996.

Results allow IDNR to adjust harvest regulations for large changes in abundance of raccoons. For example, seasons for raccoon hunting were expanded from 62 days in 1990–91 to 93 days by 2000–01. Likewise, trapping seasons were expanded from 47 to 82 days. These changes are not likely to affect harvest levels during periods of low pelt values (Hubert 1990). However, liberal seasons maximize recreational opportunities for core participants and make the most of upswings in volatile markets.

Raccoons are an important part of Illinois' fur harvest. They also cause property damage (Bluett 2003) and affect other wildlife populations through diseases, parasites, and predation (Heske et al. 1999, Mitchell et al. 1999, Schmidt 2002). Spring spotlight surveys provide reliable information for management decisions, ecological research, and efforts to increase public support for wildlife conservation.

Sampling ≥ 37 routes per year allows reliable estimation of trends (Nielsen et al. 2009). Forty-one routes were completed in 2015.

LITERATURE CITED

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Table 1. Numbers of animals observed per mile for spotlight survey routes in Illinois, 2015.

Species	Comparable routes ^a (n = 39)		
	No. observed	No. observed/mi	% change from 2014
Raccoon	1273	1.338	+6.5
White-tailed deer	4861	5.110	-12.2
Cottontail rabbit	452	0.475	+5.1
Domestic cat	168	0.177	+4.7
Opossum	125	0.131	+4.8
Striped skunk	60	0.063	+8.6

^aComparable routes are those run in both 2014 and 2015.

Table 2. Annual trends in spring spotlight survey observations for raccoons in Illinois, 1981–2015.

Year	No. routes	No. miles sampled	No. raccoons observed	No. raccoons observed/mi	No. comparable routes	% change from previous year ^a
1981	34	834.0	454	0.54	--	--
1982	41	1007.0	600	0.60	34	+18.4
1983	41	1002.0	670	0.67	39	+10.1
1984	43	1066.0	666	0.62	40	-3.4
1985	45	1114.0	653	0.59	43	-3.7
1986	45	1119.0	797	0.71	42	+13.6
1987	46	1145.0	647	0.57	45	-19.8
1988	45	1099.0	768	0.70	44	+18.3
1989	44	1075.0	754	0.70	42	-1.0
1990	46	1125.0	1072	0.95	44	+38.6
1991	44	1075.0	1204	1.12	44	+24.4
1992	47	1148.0	1281	1.12	44	-5.0
1993	47	1142.5	1346	1.18	46	+2.9
1994	45	1098.7	1463	1.33	40	+11.5
1995	48	1100.0	1501	1.28	45	<1.0
1996	48	1174.0	1713	1.46	48	+12.5
1997	47	1142.0	1523	1.33	47	-9.7
1998	47	1149.0	1232	1.07	41	-20.2
1999	46	1129.0	1512	1.34	44	+25.8
2000	46	1124.0	1337	1.19	45	-11.3
2001	48	1179.0	1467	1.24	46	+2.5
2002	48	1175.0	1308	1.11	48	-10.5
2003	47	1155.0	1263	1.09	47	-0.7
2004	47	1153.0	1312	1.14	47	+4.2
2005	47	1155.0	1306	1.13	47	-0.8
2006	45	1105.0	1102	1.00	45	-12.8
2007	47	1155.0	1335	1.16	45	+17.9
2008	46	1119.0	1328	1.19	46	+0.9
2009	46	1129.0	1330	1.18	46	-0.7
2010	46	1130.0	1339	1.21	45	+2.6
2011	44	1080.0	1316	1.22	43	+5.1
2012	44	1067.0	1080	1.01	41	-22.5
2013	37	907.0	1096	1.21	34	+21.3
2014	39	949.2	1082	1.27	35	+8.9
2015	41	1002.2	1314	1.31	39	+6.5

^aBased on data from comparable routes

Table 3. Spotlight survey observations for selected species in Illinois, 2015.

County	No. Miles	No. raccoons	No. deer	No. rabbits	No. cats	No. opossums	No. skunks
Adams	25.0	40	78	21	5	2	0
Cass	25.0	6	246	6	1	0	0
Clark	25.0	27	136	10	4	4	1
Clay	25.0	22	136	9	6	0	3
Clinton-Washington	25.0	46	104	10	3	9	11
Coles	25.0	38	151	27	7	3	0
Cook	13.0	20	6	0	1	1	8
Douglas	25.0	26	100	16	3	3	2
DuPage	16.2	17	21	1	0	1	0
Gallatin	25.0	19	112	4	2	9	0
Greene	25.0	17	133	11	6	7	1
Hamilton	25.0	15	322	12	1	6	0
Iroquois	25.0	46	59	7	3	1	0
Jackson	25.0	8	129	44	5	7	0
Jasper	25.0	69	127	19	6	4	1
Jefferson	25.0	15	99	4	2	5	3
JoDaviess	25.0	35	59	5	5	2	6
Johnson	24.0	41	205	13	9	11	1
Kankakee	25.0	74	41	3	5	1	0
Kendall	25.0	50	124	12	1	1	0
Lee	25.0	40	123	6	6	1	0
Macoupin	25.0	11	158	11	2	4	0
Marshall-Woodford	25.0	44	118	3	5	1	1
Mason	25.0	18	100	8	3	1	1
McHenry-Lake	25.0	37	66	11	4	6	1
McLean	25.0	50	132	5	5	4	2
Menard-Logan	25.0	15	38	0	4	0	1
Mercer	25.0	60	95	9	3	0	2
Monroe-Randolph	24.0	16	116	2	4	6	8
Montgomery	25.0	18	136	5	8	3	0
Morgan	25.0	49	115	22	6	2	0
Ogle	25.0	43	86	5	10	0	1
Piatt	25.0	4	10	2	0	0	0
Pike	25.0	41	325	55	6	6	0
Sangamon	25.0	29	74	11	6	2	0
Tazewell	25.0	20	89	6	2	2	0
Union	25.0	22	338	29	2	6	0
Warren	25.0	34	88	2	5	1	1
Wayne	25.0	29	195	22	6	7	1
Whiteside	25.0	56	89	11	6	1	5
Will	25.0	47	58	6	4	1	0