

2004 Spotlight Survey

Wildlife Diversity Program Note #04-2

Methods

Each spring, Department personnel count numbers of raccoons and other species observed along standardized 25-mile routes. Surveys are conducted at night while driving slowly (10–15 mph) and using a 100,000-candlepower spotlight to detect animals by seeing their entire body or light reflected from their eyes. Rybarczyk (1978) described this method in detail.

Routes are phased in from the southernmost counties (21 March to 4 April) to the northernmost (11–25 April) to account for differences in phenology. Ideally, routes are sampled on evenings when the relative humidity is $\geq 60\%$, temperatures are $>32^\circ\text{F}$, wind velocity is $<10\text{mph}$, and rain or heavy fog is absent. Hubert (1990) provided other sampling considerations.

Results

During 2004, staff sampled 1,153 miles and observed 7,818 animals on 47 standard routes (Table 1). Animals observed in addition to target species included 34 coyotes, 2 beavers, 1 bobcat, 1 river otter, 5 muskrats, 3 mink, 2 gray fox, 5 red fox, 2 wood ducks, and 1 great blue heron. Staff also recorded 8 owls and 3 geese; species were not identified in all cases.

Numbers of raccoons observed per mile on routes sampled in both 2004 and 2003 were similar (Table 2). Indices varied from 0.16–3.12 raccoons per mile for individual counties (Table 3). Long-term (1981–2002) indices correlated negatively with harvest levels during the preceding season ($r = -0.643$; 20df; $P < 0.01$).

Discussion

Spotlight surveys are useful for monitoring the relative abundance of raccoons at large spatial scales, particularly over multiple years (Gehrt et al. 2002). During the past 3 years, the statewide raccoon population was about 25% less than its peak in 1996 and about twice as great as in 1981, the first year of the spotlight survey.

Data from the spotlight survey allow IDNR to administer harvest seasons responsibly by making adjustments for changes in raccoon abundance. For example, seasons for raccoon hunting were expanded from 62 days in 1990-91, when the population began to increase, 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 the upswings in volatile markets.

Raccoons comprise an important part of Illinois' fur harvest. They also cause much property damage (Bluett 2002), harbor diseases and parasites that affect humans, pets and other wildlife (Mitchell et al. 1999), and affect some wildlife populations through predation (Heske et al. 1999). We recommend that spring spotlight surveys should be continued because they provide the most timely and statistically reliable information for management decisions, ecological research, and efforts to increase the public's knowledge and support for wildlife conservation.

Literature Cited

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Table 1. Numbers of animals observed per mile for spotlight survey routes in Illinois, 2004.

Species	Comparable routes ^a (<i>n</i> = 47)		
	No. observed	No. observed/mile	% change from 2003
Raccoon	1,312	1.140	+4.2
White-tailed deer	5,351	4.641	+14.1
Cottontail rabbit	623	0.540	+23.8
Domestic cat	274	0.238	-11.2
Opossum	143	0.124	+12.7
Striped skunk	48	0.042	-4.5

^aComparable routes are those run during both 2003 and 2004.

Table 2. Annual trends in spring spotlight survey observations for raccoons in Illinois, 1981 through 2004.

Year	Number of routes sampled	Total miles sampled	Total raccoons observed	Raccoons observed per mile	Number of comparable routes	Percent change from previous year ^a
1981	34	834.0	454	0.54	--	--
1982	41	1,007.0	600	0.60	34	+18.4
1983	41	1,002.0	670	0.67	39	+10.1
1984	43	1,066.0	666	0.62	40	-3.4
1985	45	1,114.0	653	0.59	43	-3.7
1986	45	1,119.0	797	0.71	42	+13.6
1987	46	1,145.0	647	0.57	45	-19.8
1988	45	1,099.0	768	0.70	44	+18.3
1989	44	1,075.0	754	0.70	42	-1.0
1990	46	1,125.0	1,072	0.95	44	+38.6
1991	44	1,075.0	1,204	1.12	44	+24.4
1992	47	1,148.0	1,281	1.12	44	-5.0
1993	47	1,142.5	1,346	1.18	46	+2.9
1994	45	1,098.7	1,463	1.33	40	+11.5
1995	48	1,100.0	1,501	1.28	45	<1.0
1996	48	1,174.0	1,713	1.46	48	+12.5
1997	47	1,142.0	1,523	1.33	47	-9.7
1998	47	1,149.0	1,232	1.07	41	-20.2
1999	46	1,129.0	1,512	1.34	44	+25.8
2000	46	1,124.0	1,337	1.19	45	-11.3
2001	48	1,179.0	1,467	1.24	46	+2.5
2002	48	1,175.0	1,308	1.11	48	-10.5
2003	47	1,155.0	1,263	1.09	47	-0.7
2004	47	1,153.0	1,312	1.14	47	+4.2

^aBased on data from comparable routes.

Table 3. Spotlight survey route observations for selected species in Illinois, 2004.

County	Miles	No. raccoons	No. deer	No. rabbits	No. cats	No. opossums	No. skunks
Adams	25	21	107	17	7	3	0
Cass	25	13	233	6	7	2	3
Clark	25	12	140	19	4	2	0
Clay	25	14	74	10	10	1	2
Clinton-Wash	25	12	63	11	1	3	2
Coles	25	6	112	3	3	0	0
Cook	13	26	27	6	0	1	3
Douglas	25	17	92	23	19	5	1
DuPage	17	47	18	0	0	0	1
Effingham	25	5	55	7	4	0	0
Fayette	25	14	85	10	5	5	1
Fulton	25	19	104	13	1	1	1
Gallatin	25	16	151	24	10	3	0
Greene	25	25	111	41	6	4	0
Hamilton	25	12	275	12	2	3	1
Iroquois	25	61	106	2	2	1	0
Jackson	25	20	102	10	5	11	1
Jasper	25	23	169	13	12	11	2
Jefferson	25	19	84	5	6	9	0
JoDaviess	25	41	52	3	3	0	0
Johnson	25	15	233	4	3	4	1
Kankakee	25	46	27	16	14	2	2
Kendall	25	80	123	20	4	1	0
Lake-McHenry	25	35	63	10	6	2	0
LaSalle	0	0	0	0	0	0	0
Lawrence	25	18	110	13	2	9	0
Lee	25	41	64	13	2	1	1
Macoupin	25	8	42	20	1	3	0
Marshall-Woodf	25	29	102	10	4	1	4
Mason	25	33	149	1	5	0	0
McLean	25	36	151	9	14	9	0
Menard-Logan	25	13	70	5	1	0	2
Mercer	23	23	23	3	1	3	1
Monroe-Randol	25	38	53	15	0	8	5
Montgomery	25	13	95	24	5	5	0
Morgan	25	62	128	29	16	5	0
Ogle	25	34	93	3	5	0	0
Piatt	25	13	157	39	9	2	0
Pike	25	28	447	17	5	2	0
Sangamon	25	4	55	19	10	5	0
Stephenson	25	78	100	10	3	3	0
Tazewell	25	25	81	2	8	4	0
Union	25	10	181	19	6	5	9
Vermilion	25	47	128	7	11	0	0
Warren	25	30	51	11	13	1	2
Wayne	25	10	126	12	16	1	1
Whiteside	25	76	98	42	2	1	2
Will	25	44	241	15	1	1	0