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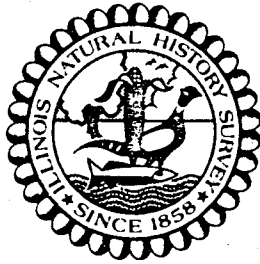
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June 1990

# ILLINOIS NATURAL HISTORY SURVEY



## Section of Wildlife Research

Illinois Forest Game Investigations

W-87-R-12

Annual Report

by

Charles M. Nixon, Terry L. Esker, and John Kube  
Illinois Natural History Survey

1 July 1989 through 30 June 1990



Performance Report  
Annual Job Progress Report

**State:** Illinois

**Project No.:** W-87-R-12

**Project Type:** Research

**Project Title:** Cooperative Forest Wildlife Research

**Sub-project No. VII; Title:** Illinois Deer Investigations

**Period Covered:** 1 July 1989 through 30 June 1990

This performance report covers jobs active under the W-87-R-12 segment.

**Study No. 1; Title:** Population dynamics of the Illinois deer herd.

Study Objectives:

1. To analyze the annual status and harvest of deer in each county using computer programs to develop a conceptual model (of deer abundance and harvest, hunter demands and success, and available habitats) that will provide current and future direction to management strategies on the county level.
2. To determine annual and seasonal sex and age specific mortality rates for deer using marked samples of deer captured in western and northern Illinois.
3. To sample the perceptions of rural landowners regarding deer abundance and their tolerance of current deer depredation levels, hunter behavior, and harvest regulations.
4. To refine county and regional deer population computer models using natality and mortality rates provided by this project and, by aligning population levels

with landowner tolerance, to develop guidelines for manipulating harvests to maintain deer numbers within acceptable limits to most county guidelines.

5. To prepare reports from the results of project study investigations and to help defer the costs of printing these reports.

Job No. 1-A; Title: Population dynamics of the Illinois deer herd--harvest analysis and current status.

Objectives: To continue to analyze the annual status and harvests of deer, to refine county and regional deer population computer models using natality and survival estimates provided by this project, and to provide the IDOC with improved deer population projections, harvest potentials, and knowledge of hunter behaviors.

(a) Activity:

Firearm hunters killed 56,139 deer in 1989, a record harvest (Table 1). Statewide, hunter success averaged more than 46%, also a record. The total harvest represents an increase of 8,424 over the firearm harvest of 1988.

Weather was generally favorable during both 3-day firearm seasons, hunters were more abundant (hunter numbers were up about 10% statewide over 1988), and Illinois has an increasing deer population. All these factors contributed to the record harvest.

Deer harvests and hunter success rates for 1989 were entered into a new computer data base. A new computer data base was necessary as a result of a change in the University of Illinois mainframe computer (new system) and a modification of software programs from APPLE-compatible to IBM-compatible for summarizing county and regional harvest totals. A delay in receipt of the raw harvest data for 1989 and continuing problems with computer software associated with the shift to IBM-compatible summaries has delayed county and regional harvest summary

updates. Updated estimates of county, regional, and statewide harvests will be completed during the first quarter of the next segment.

Job 1-B; Title: Estimates of regional doe natality rates, fawn recruitment, and yearling-adult survival.

Objectives: To determine seasonal and annual age specific survival rates and doe natality rates for deer in west-central and northern Illinois.

(a) Activity:

#### Capture and Marking

Deer were livetrapped from January through March on sites in Brown and Adams counties (west-central) and DeKalb County (northern), Illinois. A total of 57 deer were captured and marked in west-central Illinois and 25 in northern Illinois. Females were marked with plastic numbered ear tags and a 7.5-cm-wide plastic collar bearing reflective numbers (12 fawns, 19 yearling and older does) or radio transmitters (5 fawns, 17 yearling and older does). Males were marked with plastic ear tags (26 fawns, 1 yearling) or radio transmitters (2 adult males).

#### Natality

We attempted to collect doe reproductive tracts from selected hunters in Brown and Adams counties in 1989. We mailed requests to save the reproductive organs and plastic collecting bags to approximately 400 firearm hunters. These hunters were selected by the county conservation police officers as likely to kill does. Only 12 hunters complied with our request. This low response was not cost effective and will not be used again, at least not in west-central Illinois.

Blood samples were collected from 23 females livetrapped in west-central Illinois and assayed for progesterone levels. All yearling and older females had levels

of progesterone  $>5.9$  ng/ml and were judged to be pregnant. Of 8 fawns tested, 5 were judged to be barren (progesterone  $<0.70$  ng/ml), 2 were probably pregnant ( $>1.5$  ng/ml), and 1 was definitely pregnant (3.03 ng/ml). Hind foot and chest girth measurements of the 8 fawn does assayed for progesterone levels did not indicate that barren fawns were consistently smaller compared with pregnant fawns.

We are also using repeated observations of marked does and their fawns to determine fawn production and fawn survival to weaning age in both west-central and northern Illinois. At least 1 marked doe at each site has been seen with triplet fawns (as of 20 July 1990).

### Survival

Three females (1 fawn and 2 yearlings) apparently died as a result of livetrapping trauma (3/82, 3.6%); no other mortalities have been reported to us as of 20 July 1990. Twenty-three of these deer are marked with mortality sensitive radio transmitters (pulse rate increases if transmitters remains inactive for a 4-hour period).

### Dispersals and Local Movements

As of 20 July 1990, only 1 marked deer, a yearling male, was known to have dispersed from the capture sites in Brown-Adams counties. This area is well forested and offers deer abundant cover. Thus yearlings leaving the family group in late spring would not have to disperse far to find adequate shelter. All 17 radio-marked females on the Brown-Adams study area have remained close to their capture locations. One of 2 adult males radio marked has moved about 5-6 miles from his capture site--a site featuring dense understory cover. The new site is a pasture featuring open understories and is close to the site of capture of the other radio-marked adult male. We do not know if this movement represents a short dispersal movement by this male or only a shift to habitats offering a more open understory during summer. This male



returned to the vicinity of his capture site in late July, suggesting the capture site represents his primary breeding range.

In contrast to the abundant cover found on the Brown-Adams study area, cover is scarce surrounding the Shabbona State Park study area in DeKalb County. The Park lies at the head of Indian Creek watershed in an area of intensive agricultural development. Deer dispersing from the Park must move several miles to find cover. As of 20 July, we have confirmed that a minimum of 3 deer dispersed from the Park, 2 males and a female. One observation was 17 miles west of the Park. An additional 7 deer (2 fawn males, 2 fawn females, 1 yearling male and 2 adult females) have not been seen in or close to the park since May and may have dispersed or migrated.

#### Condition

Captured deer were in good to excellent condition on both study areas. Hind foot lengths of fawns were similar on each study area (DeKalb County: males--45.0 + 0.3 cm, n = 3, females--43.0 + 0.8 cm, n = 4; Brown County: males--44.8 + 0.4, n = 19, females--45.3 + 0.7, n = 11) and indicate good growth into winter.

Thirty-seven deer in Brown-Adams counties were screened for several diseases: Anaplasmosis, Bluetongue, EHD, Theileria, Babesia, Leptospirosis, and Brucellosis. These deer tested negative for Anaplasmosis, Brucellosis, and Leptospirosis. Eight deer tested positive to exposure to Babesia odocoilei (1 adult male, 2 adult females, 3 fawn males, 2 fawn females). Four of these deer were captured at the same site on the study area. Two deer tested positive to exposure to EHD.

- (b) Target Date of Achievement: 1 September 1992.
- (c) Date of Accomplishment: On schedule.
- (d) Significant Deviations: None.

(e) Remarks: None.

(f) Recommendations: None.

(g) Cost: Federal - \$37,575; State - \$12,525; Total - \$50,100

Job No. 1-C; Title: Rural landowner attitudes toward deer and IDOC deer management.

Objectives: To determine rural landowner attitudes toward present deer abundance, deer damage, IDOC harvest management, and hunter behavior.

(a) Activity:

A preliminary summary of the 1989 survey of landowner attitudes is appended to this report (Appendix 1). This survey was designed as a follow-up to a similar survey conducted by the IDOC in 1983 in order to measure changes in landowner attitudes after 6 years of continuous growth in deer numbers.

A more detailed analysis of landowner responses in both the 1982 and 1989 surveys will be undertaken during the R-13 segment.

(b) Target Date of Achievement: 1 September 1991.

(c) Date of Accomplishment: On schedule.

(d) Significant Deviations: None.

(e) Remarks: None.

(f) Recommendations: None.

(g) Cost: Federal - \$12,525; State - \$4,175; Total - \$16,700.

An amendment to the R-12 project was approved to pay for the design and implementation of the landowner survey by the Illinois Department of Agriculture. The

totals under costs shown above are the amounts originally approved for the study. The additional funds were: Federal - \$12,402; State - \$4,134; Total - \$16,536.

Job No.1-D; Title: Data analysis and preparation of reports.

(a) Activity:

The following manuscripts were accepted for publication during R-12 segment:

Nixon, C.M., L.P. Hansen, P.A. Brewer, and J.E. Chelsvig. Ecology of white-tailed deer in an intensively farmed region of Illinois. Wildlife Monograph, The Wildlife Society.

Nixon, C.M., and L.P. Hansen, and S.P. Havera. Growth patterns of fox squirrels in east-central Illinois. American Midland Naturalist.

Nixon, C.M., P.A. Brewer, and L.P. Hansen. 1990. White-tailed doe tolerates nursing by non-offspring. Trans. Illinois Acad. Science.

Nixon, C.M. and L.P. Hansen. Biology of white-tailed deer in the intensively farmed midwestern United States. Paper presented at the 2nd international symposium on the Biology of Deer, 28 May-1 June 1990 at Mississippi State University, Starkville. This paper will be published as part of a book of the proceedings by Springer-Verlag, New York.

The following manuscript was prepared and sent out for review:

Nixon, C.M., L.P. Hansen, P.A. Brewer, and J.E. Chelsvig. Longevity and fawn production of female whitetails on a refuge in eastcentral Illinois.

Project summaries, a final report (for the R-8-10 segment), and quarterly reports of progress for the present projects were submitted to the funding agencies as required. Various topics dealing with the deer harvest program were reported to the IDOC as requested at intervals throughout the R-12 segment.

- (b) Target Date of Achievement: 1 September 1992.
- (c) Date of Accomplishment: On schedule.
- (d) Significant Deviations: None.
- (e) Remarks: None.
- (f) Recommendations: None.
- (g) Cost: Federal - \$4,875; State - \$1,625; Total - \$6,500

## PREPARED BY:

Charles M. Nixon  
Forest Wildlife Ecologist  
Illinois Natural History Survey  
Center for Wildlife Ecology

Terry L. Esker  
Illinois Natural History Survey  
Center for Wildlife Ecology

John Kube  
Illinois Department of Conservation, Springfield

## APPROVED BY:



Glen C. Sanderson, Director  
Center for Wildlife Ecology  
Illinois Natural History Survey

DATE: 24 August 1990

Table 1. Firearm harvests, hunter density, and hunter success for all open counties in 1989.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
Adams	545.3	88.6	3,782	23	2,092	1,236	854	55	42
Alexander	151.0	58.3	1,410	41	456	331	125	32	127
Bond	241.0	29.6	833	36	428	271	157	51	69
Boone	180.3	8.8	415	21	162	105	57	39	54
Brown	195.9	54.6	3,439	16	1,061	655	405	54	51
Bureau	556.2	38.7	1,870	21	717	481	235	38	54
Calhoun	159.8	66.6	1,513	44	715	458	255	47	93
Carroll	284.5	32.1	1,980	16	786	461	325	39	41
Cass	239.2	43.3	1,098	39	457	300	197	45	95
Champaign	638.8	9.0	483	19	194	132	62	40	46
Christian	454.1	21.3	707	30	365	241	124	51	58
Clark	322.7	62.5	1,018	61	561	376	185	55	111
Clay	300.2	48.4	989	49	518	306	212	52	93
Clinton	302.1	43.2	1,478	29	541	306	235	36	80
Coles	325.5	27.8	834	33	358	221	137	42	78

Table 1. Page 2.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
Crawford	285.2	49.9	972	51	549	342	207	56	91
Cumberland	221.2	33.7	824	41	389	242	147	47	87
DeKalb	405.6	5.3	559	9	171	127	44	30	31
DeWitt	253.7	14.1	567	25	278	176	102	49	51
Douglas	266.9	7.7	374	21	163	98	65	43	47
Edgar	398.7	23.9	537	45	270	194	76	50	89
Edwards	142.5	16.6	490	34	270	154	116	55	61
Effingham	306.0	51.2	1,026	50	426	246	180	41	120
Fayette	460.1	86.8	1,752	50	923	569	354	52	94
Ford	310.8	2.9	195	15	77	53	24	39	38
Franklin	265.2	47.4	961	49	408	295	113	42	116
Fulton	557.0	108.8	2,454	44	1,052	662	390	42	103
Gallatin	207.8	44.0	949	46	418	269	149	44	105
Greene	347.6	50.7	1,246	41	685	422	263	54	74
Grundy	270.3	17.7	858	21	364	245	119	42	49

Table 1. Page 3.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
Hamilton	278.9	40.4	1,097	37	518	352	166	47	78
Hancock	509.1	66.3	2,452	27				50	
Hardin	115.8	64.6	1,598	40	664	440	223	41	97
Henderson	238.7	36.7	1,335	27	530	310	220	39	69
Henry	527.3	23.1	913	25	356	222	134	38	65
Iroquois	715.7	21.3	746	29	360	239	121	48	59
Jackson	377.3	134.6	2,963	45	1,620	1,085	534	54	83
Jasper	317.2	33.8	1,181	29	686	433	253	58	49
Jefferson	364.6	69.3	1,552	45	848	539	309	54	82
Jersey	238.5	63.3	895	71	317	210	107	35	200
Jo Daviess	385.8	72.9	3,601	20	1,664	1,022	642	46	44
Johnson	221.7	89.9	2,211	41	1,089	793	296	49	83
Kankakee	434.3	17.8	538	33	171	112	59	31	104
Kendall	206.2	7.1	309	23	99	76	23	32	72
Knox	460.8	50.5	1,661	30	705	441	264	46	72



Table 1. Page 4.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
LaSalle	728.8	39.0	1,322	30	515	338	177	38	76
Lawrence	239.4	32.5	653	50	330	198	132	50	98
Lee	463.9	15.2	1,220	12	517	332	185	42	29
Livingston	669.1	10.8	582	19	253	179	74	43	43
Logan	396.1	9.9	466	21	244	153	91	51	41
McDonough	377.3	36.6	1,265	29	614	361	253	48	60
McHenry	388.2	21.9	1,179	19	469	316	153	39	47
McLean	758.3	17.5	824	21	404	286	118	49	43
Macon	372.1	8.5	417	20	153	103	50	36	56
Macoupin	553.5	84.8	1,323	64	596	422	174	45	142
Madison	466.0	54.2	782	69	271	175	96	34	200
Marion	366.6	67.5	2,534	27	558	333	225	42	121
Marshall	248.4	25.8	1,100	23	411	256	115	37	63
Mason	343.1	43.0	869	49	329	199	130	37	131
Massac	153.9	34.5	513	67	236	181	55	46	146

Table 1. Page 5.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
Menard	201.8	21.9	672	33	295	204	91	43	74
Mercer	357.7	34.3	1,571	22	660	400	259	42	52
Monroe	248.5	51.5	1,619	32	714	436	278	44	72
Montgomery	450.5	39.4	947	42	492	321	171	51	80
Morgan	363.3	41.3	978	42	507	313	194	51	81
Moutrie	214.8	12.7	424	30	172	119	53	40	74
Ogle	486.0	32.3	1,671	19	739	503	235	44	44
Peoria	397.1	63.2	1,410	45	526	331	195	37	120
Perry	283.0	52.8	1,657	32	996	639	355	60	53
Piatt	281.0	6.7	373	18	115	77	38	30	58
Pike	531.1	122.5	3,475	32	2,271	1,453	818	65	54
North					1,292	818	473	39	
Pope									
South	239.6	149.3	4,518	33	472	339	133	38	
Pulaski	130.1	29.7	756	39	429	304	125	56	69
Putnam	102.2	16.8	615	27	243	157	86	39	69

Table 1. Page 6.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
Randolph	372.9	80.7	2,324	35	1,238	789	445	53	65
Richland	230.5	30.5	633	48	384	239	145	52	79
Rock Island	270.5	44.9	1,275	35	456	278	178	35	98
St. Clair	430.1	51.4	1,036	50	527	331	196	50	96
Saline	246.3	54.4	1,348	41	548	357	191	40	99
Sangamon	554.0	29.1	794	37	361	254	107	45	81
Schuyler	279.1	84.4	1,775	48	865	511	354	48	98
Scott	160.4	24.0	769	32	414	239	175	53	58
Shelby	485.1	55.0	1,256	44	632	408	223	50	87
Stark	184.1	5.2	374	14	150	95	55	40	35
Stephenson	361.3	17.9	1,248	14	610	343	267	48	29
Tazewell	415.8	28.4	987	29	392	233	159	40	72
Union	265.1	104.7	2,370	44	1,147	788	358	48	91
Vermilion	575.9	36.4	760	48	347	246	101	45	105
Wabash	143.1	12.6	396	32	160	103	57	40	79

Table 1. Page 7.

County	Total Acreage	Forested Acreage	Number of Permits Issued	Forested Acres/Hunter	Total Deer Harvest	Bucks	Does	Hunter Success	Forested Acres/ Deer Killed
Warren	347.8	22.6	711	32	347	206	140	48	65
Washington	360.7	51.4	1,565	33	732	441	290	46	70
Wayne	457.6	62.0	868	71	472	309	163	54	131
White	318.2	40.3	881	46	493	328	165	55	82
Whiteside	437.0	19.9	1,350	15	560	292	268	41	36
Will	540.0	34.2	540	63	116	80	36	21	195
Williamson	273.7	85.4	1,868	46	807	545	262	43	106
Winnebago	329.9	22.6	1,372	16	497	321	176	36	45
Woodford	337.5	30.1	939	32	432	271	161	46	70

Total deer harvest includes deer recorded with no sex.

PRELIMINARY SUMMARY OF 1990 LANDOWNER QUESTIONNAIRE

Charles Nixon, INHS

John Kube, IDOC

Data collection for the 1990 survey of landowner attitudes regarding deer and deer hunting was undertaken by the Illinois Agricultural Statistics Service, a division of the Illinois Department of Agriculture. This agency was selected to conduct the survey because they maintain an up-to-date listing of owners/operators of active Illinois farms, and they limit access to this listing. In addition, the Statistics Service routinely designs questionnaires used to sample farmer attitudes dealing with a wide array of topics dealing with agriculture and thus were well equipped to handle a survey of farmer attitudes regarding deer abundance and deer hunting.

The 1990 landowner survey is similar to the survey conducted in 1983 following the 1982 hunting season. A later report will compare landowner attitudes in 1982 with those expressed in 1990; this present report will deal only with the 1990 survey results.

METHODS

Questions to be included in the questionnaire were selected by Nixon and Kube based on questions included on the 1983 survey, solicited questions from IDOC, U. of Illinois, and INHS personnel, and the statisticians of the Agricultural Statistics Service. A total of 25 questions were finally selected (see Results).

The sample of landowners was randomly selected from the Illinois Agricultural Statistics Service list of farm operators. Selection was stratified by Deer Region, using a total of 9 Regions

(the 8 Deer Regions plus Jo Daviess and Carroll counties which were split away from Deer Region 1) (Figure 1). Farms with less than 40 acres were excluded so as to sample from the same list of owner/operators used in the 1983 survey. Farmers within the 4-county metro area (Cook, DuPage, Lake, Kane) in northeastern Illinois were excluded because these counties are closed to firearm hunting.

A total of 280 farm operators were selected in each of Deer Regions 1-8 and 272 in Deer Region 9, for a total of 2,512 questionnaires mailed 9 February 1990. A second mailing and two telephone followups to all non-respondants resulted in 1,931 complete reports, or a 77% response rate. The lowest return (68%) occurred in Region 8, the highest in Region 9 (83%).

#### RESULTS

The results presented in this report includes only those questions dealing with deer and deer hunting and does not include responses to questions dealing with the farm operation included in the survey by the Agricultural Statistics Service.

Question 1--Do you have deer on your farm?

	Yes
	( % )
Region 1---	83.7
Region 2--	68.6
Region 3--	80.8
Region 4--	90.9
Region 5--	69.9
Region 6--	87.8
Region 7--	88.5

Region 8-- 92.7

Region 9-- 87.6

Deer are present on most farms in 1989-90. Only in Regions 2 (northcentral) and 5 (eastcentral) are deer less dispersed because many farms are devoid of woody cover in these intensively farmed Regions.

Question 2--When are deer present on your farm?

( % )

	Only In Summer	All Year
	( % )	
Region 1---	9.8	90.2
Region 2--	15.6	84.4
Region 3--	9.4	90.6
Region 4--	3.5	96.5
Region 5--	14.4	85.6
Region 6--	6.6	93.4
Region 7--	6.3	93.7
Region 8--	1.1	98.8
Region 9--	8.7	91.3

Deer are present throughout the year on most farms. Again, in Regions 2 and 5, the intensively farmed Regions, deer are often present only in summer. This is due to the extensive dispersals (about 50% of the fawns and 20% of the yearling females disperse) and migrations (about 20% of the yearling and older females migrate) of deer that occur each spring, as deer leave the scattered wintering areas and move to small woodlots to spend the summer and fall months. Many of these deer leave these woodlots in late fall to

spend the winter in larger, more secure forests.

Question 3--How do you feel about deer on the farm?

	Enjoyable	Enjoyable but Worry About Damage	Nuisance	No feeling
	Worry About Damage			
	(% )			
Region 1--	56.1	30.1	7.5	6.4
Region 2--	53.2	35.5	6.4	4.9
Region 3--	55.3	29.3	9.4	6.1
Region 4--	42.8	40.3	13.4	3.5
Region 5--	54.8	30.9	8.4	5.8
Region 6--	44.1	38.7	10.2	7.9
Region 7--	49.5	33.3	10.4	6.8
Region 8--	53.7	22.6	16.4	7.3
Region 9--	51.0	42.3	5.2	1.6

Except in Regions 4, 6, and 7, a majority of landowners still enjoy the presence of deer on the farm. More than 10% of the landowners questioned in Regions 4,6,7,and 8 consider deer a nuisance.

Question 4-- Over the past 5 years, how have deer numbers changed on your farm?

	More	About the Same	Fewer	Don't Know
	( % )			
Region 1--	59.4	33.1	1.7	5.7
Region 2--	66.4	27.1	3.6	2.9
Region 3--	53.3	32.2	5.0	9.4
Region 4--	72.1	21.9	3.5	2.5
Region 5--	65.8	24.5	1.3	8.4



Region 6--	76.3	18.3	1.6	3.7
Region 7--	69.9	18.1	2.6	9.3
Region 8--	69.7	24.0	2.3	4.0
Region 9--	52.8	36.9	5.6	4.6

A majority of sampled farmers in all Regions recognize that deer are more abundant than 5 years ago, with fewer deer noted by less than 5% of the landowners. Increases were most noticed in Regions 4,6,7, and 8, in westcentral, southcentral, and southern Illinois (Figure 1).

Question 5--How would you like to see the number of deer on your farm change in the future?

	More Deer	About the Same	Fewer Deer	No Opinion
	( % )			
Region 1--	6.3	61.5	26.4	5.8
Region 2--	14.3	55.7	25.7	4.3
Region 3--	11.6	52.5	29.3	6.6
Region 4--	5.5	48.3	41.3	5.0
Region 5--	10.5	59.5	24.2	5.9
Region 6--	9.7	46.2	39.3	4.8
Region 7--	8.9	48.4	33.2	9.5
Region 8--	11.5	43.7	37.9	6.9
Region 9--	7.2	55.4	33.9	3.6

Apparently a majority of the farmers we sampled are willing to tolerate deer at existing levels, and about 10% statewide will accept even more deer than were present in the winter of 1989-90. At least 1/3 of those sampled now have more deer than they are willing to tolerate in the future.

Question 6-- How would you describe the amount of crop and fence damage caused by deer on your farm in 1988 and 1989?

	Damage Reported	No Damage
	( % )	
Region 1--	71.7	28.3
Region 2--	69.6	30.4
Region 3--	73.3	26.7
Region 4--	77.8	22.2
Region 5--	64.2	35.8
Region 6--	69.8	30.2
Region 7--	72.7	27.3
Region 8--	65.1	34.9
Region 9--	76.3	23.7

Nearly 3 out of 4 farmers are now reporting some deer damage to crops or fences throughout the state. Damage is most severe in Regions 4 and 9, and least severe in Regions 5 (eastcentral) and 8 (extreme southern Illinois, Figure 1).

Question 6A-- What was the relative extent of damage caused by deer on your farm in 1988 and 1989?

	Light	Moderate	Severe
	( % )		
	1988		
Region 1--	70.8	25.8	3.3
Region 2--	74.2	23.7	2.1
Region 3--	63.8	26.8	9.5
Region 4--	62.9	31.8	5.3
Region 5--	73.4	21.3	5.3

Region 6--	67.5	23.6	8.9
Region 7--	77.4	14.3	8.3
Region 8--	57.3	33.6	9.1
Region 9--	69.7	24.8	5.5

1989

Region 1--	69.8	26.7	3.5
Region 2--	71.9	24.7	3.4
Region 3--	64.5	25.0	10.4
Region 4--	58.3	34.0	7.6
Region 5--	68.5	23.6	7.9
Region 6--	61.8	26.8	11.4
Region 7--	75.6	16.3	8.2
Region 8--	53.9	33.3	12.8
Region 9--	66.2	26.8	7.0

In 1988, less than 10% of the sampled farms experienced severe deer damage; However, reports of severe damage reports increased in all Regions in 1989 with the exception of Region 7. While only 2 years are not sufficient to establish long term trends, deer damage appears to be increasing in severity throughout the state as deer numbers continue to increase. Fortunately, much of the damage is considered light or moderate.

Question 7-- How do you feel about the amount of damage from deer in 1988 and 1989?

Damage Offset By Enjoyment	Damage
of Deer	Excessive

( % )

## 1988

Region 1--	80.0	20.0
Region 2--	75.9	24.1
Region 3--	73.1	26.9
Region 4--	69.9	30.1
Region 5--	75.9	24.1
Region 6--	72.3	27.7
Region 7--	72.9	27.1
Region 8--	68.1	31.9
Region 9--	78.9	21.1

## 1989

Region 1--	75.9	24.1
Region 2--	78.5	21.5
Region 3--	72.9	27.1
Region 4--	68.7	31.3
Region 5--	73.9	26.1
Region 6--	71.2	28.8
Region 7--	73.2	26.8
Region 8--	62.2	37.8
Region 9--	76.2	23.9

In both years, About 3 out of 4 farmers still enjoyed having deer on their farm; More farmers in Regions 4 (westcentral) and 8 believed deer damage has become excessive.

Question 8--What was the approximate cost to you for damage to crops and/or fences for the years 1988 and 1989?

1988

1989

Dollars

Region 1--	498	618
Region 2--	291	331
Region 3--	408	424
Region 4--	420	512
Region 5--	471	590
Region 6--	535	671
Region 7--	324	374
Region 8--	385	483
Region 9--	440	522

Estimates of damage costs increased in 1989 over 1988 in all Regions. These costs should be used with caution as they represent estimates made by the farmer, and were not developed by an unbiased observer ( in some cases damage was verified by DOC or DOA personnel). Thus these estimates are likely to be inflated. Also deer are frequently blamed for damage caused by raccoons or woodchucks and the damage estimates reported by our sampled farmers likely represents damage by all wildlife on the farm.

Question 9--Have you contacted the State Department of Conservation for help in controlling deer on your farm?

	Yes	No
	( % )	
Region 1--	0.6	99.4
Region 2--	0.0	100.0
Region 3--	1.2	98.8
Region 4--	2.1	97.9
Region 5--	1.4	98.6
Region 6--	2.8	97.2

Region 7--	1.6	98.4
Region 8--	3.6	96.4
Region 9--	3.2	96.8

The low reporting rate for damage complaints relates to the response to question 7; most sampled farmers do not consider deer numbers and damage as excessive so have not formally reported the damage to state agencies.

Question 9A--How satisfied were you with the Department's response to your deer control problem?

	Very Satisfied	Somewhat Satisfied ( % )	Not Satisfied
Region 1--	--	--	100.0
Region 2--		None Reported	
Region 3--	50.0	50.0	--
Region 4--	0.0	66.6	33.3
Region 5--	0.0	0.0	100.0
Region 6--	28.6	28.6	42.8
Region 7--	0.0	100.0	--
Region 8--	16.7	50.0	33.3
Region 9--	50.0	33.3	16.7

Remember these replies are based on a small number of positive responses (less than 5%). Also the farmer expects the DOC to solve his problem and eliminate most or all deer damage. This is almost never possible unless the damaged area is placed behind a deer proof fence. At present, the DOC does not supply farmers with fencing but instead relies upon removal of nuisance deer by permit

at the time the damage is occurring or they promote hunting opportunities on the farm. Thus it is not surprising that most farmers that have requested assistance were not happy with the response by the DOC.

Question 10-- Have you used any deer control methods on your farm?

	Yes	No
	( % )	
Region 1--	34.3	66.3
Region 2--	22.7	77.3
Region 3--	34.6	65.4
Region 4--	42.3	57.7
Region 5--	22.1	77.9
Region 6--	24.7	75.3
Region 7--	27.9	72.0
Region 8--	30.1	69.9
Region 9--	42.35	57.7

About 1 in 3 farmers have tried some kind of deer control in recent years. Control efforts were most evident in Regions 4 (westcentral) and 9 (northwest) and undertaken by the fewest farmers in the most intensively farmed areas ( Regions 2 and 5) where deer often are widely scattered in summer and early fall.

Question 11-- For those deer control methods you have used, indicate how effective each method has been.

	Not	Very	Somewhat	Not
	Used	Effective	Effective	Effective
	( % )			

Regions

1	Archery	31.7	1.7	25.0	41.7
	Firearm	15.0	16.7	46.7	21.7
	Fencing	70.0	1.7	1.7	26.7
	Repellents	98.3	0.0	0.0	1.7
	Repellent				
	Sprays	100.0	--	--	--
	Exploders	98.3	0.0	0.0	1.7
	Dogs	96.7	0.0	0.0	3.3
	Nuisance				
	Permits	100.0	--	--	--
2	Archery	43.8	6.3	31.3	18.8
	Firearm	21.9	25.0	46.9	6.3
	Fencing	56.3	3.1	3.1	37.5
	Repellents	96.9	0.0	3.1	0.0
	Repellent				
	Sprays	96.9	0.0	3.1	0.0
	Exploders	100.0	--	--	--
	Dogs	100.0	--	--	--
	Nuisance				
	Permits	100.0	--	--	--
3	Archery	31.8	6.3	28.6	33.3
	Firearm	11.1	25.4	46.0	17.5
	Fencing	76.2	1.6	1.6	20.6
	Repellents	93.7	0.0	3.2	3.2
	Repellent				
	Sprays	98.4	0.0	0.0	1.6
	Exploders	96.8	1.6	0.0	1.6



	Dogs	92.1	1.6	0.0	6.4
	Nuisance				
	Permits	96.8	0.0	0.0	3.2
4	Archery	30.6	2.4	36.5	30.6
	Firearm	7.1	20.0	54.1	18.8
	Fencing	67.1	3.5	3.5	25.9
	Repellents	92.9	0.0	1.9	5.9
	Repellent				
	Sprays	95.3	0.0	0.0	4.7
	Exploders	95.3	0.0	0.0	4.7
	Dogs	90.6	1.2	3.5	4.7
	Nuisance				
	Permits	94.1	0.0	1.2	4.7
5	Archery	29.4	2.9	47.1	20.6
	Firearm	14.7	17.7	50.0	17.7
	Fencing	73.5	0.0	2.9	23.5
	Repellents	97.1	0.0	2.9	0.0
	Repellent				
	Sprays	100.0	--	--	--
	Exploders	100.0	--	--	-
	Dogs	94.1	0.0	5.9	0.0
	Nuisance				
	permits	97.1	0.0	0.0	2.9
6	Archery	34.8	2.2	34.8	28.3
	Firearm	4.4	21.7	47.8	26.1
	Fencing	67.4	0.0	4.4	28.3
	Repellents	86.9	0.0	8.7	4.4

Repellent				
Sprays	93.5	0.0	6.5	0.0
Exploders	97.8	0.0	2.2	0.0
Dogs	93.5	0.0	0.0	6.5
Nuisance				
Permits	95.7	2.2	2.2	0.0
7 Archery	31.5	3.7	29.6	35.2
Firearm	7.4	20.4	50.0	22.2
Fencing	70.4	3.7	1.9	24.1
Repellents	96.3	0.0	3.7	0.0
Repellent				
Sprays	100.0	--	--	--
Exploders	100.0	--	--	--
Dogs	94.4	0.0	1.9	3.7
Nuisance				
permits	100.0	--	--	--
8 Archery	47.2	0.0	20.8	32.1
Firearm	7.6	22.6	49.1	20.8
Fencing	75.5	0.0	1.9	22.6
Repellents	88.7	0.0	3.8	7.6
Repellent				
Sprays	96.2	0.0	1.9	1.9
Exploders	94.3	1.9	0.0	3.7
Dogs	86.8	1.9	5.7	5.7
Nuisance				
Permits	96.2	0.0	1.9	1.9
9 Archery	33.7	2.4	34.9	28.9

Firearm	4.8	32.5	53.0	9.6
Fencing	66.3	3.6	2.4	27.7
Repellents	97.6	0.0	1.2	1.2
Repellent				
Spray	100.0	--	--	--
Exploders	100.0	--	--	--
Dogs	92.8	2.4	2.4	2.4
Nuisance				
Permits	98.8	0.0	1.2	0.0

Only firearm hunting is widely used by Illinois farmers to control deer. Most farmers recognize that archery hunting alone will not control deer numbers, or more likely, do not permit enough archery hunters to hunt on the farm each year. Commercial repellents and exploding devices are not widely used and not particularly effective when they have been used. It seems likely that many farmers who reported using fencing were not using it correctly or were using fencing that was too short or improperly placed to deter deer.

Surprisingly, not many farmers reported using nuisance deer permits to remove the worst offending deer. Those that have used the permits have not controlled their damage problem.

There appears to be a need to provide Illinois farmers with more and better information regarding means of controlling nuisance deer. Preparation of a bulletin summarizing the latest techniques, effectiveness, and costs of deer control should be undertaken by the DOC and DOA in the near future.

Question 12-- Who do you allow to hunt deer on your farm?

	Farm Closed	Anyone Who Asks	Family Only	Relatives only	Friends, Neighbors
	( % )				
Region 1--	29.1	14.5	14.5	9.9	48.8
Region 2--	42.6	9.9	12.1	13.5	36.2
Region 3--	22.2	15.0	18.3	16.1	52.2
Region 4--	13.5	25.5	23.0	23.0	51.5
Region 5--	46.4	15.2	17.9	8.6	27.2
Region 6--	17.8	31.9	18.4	18.9	47.1
Region 7--	17.5	26.2	19.7	19.1	49.2
Region 8--	16.9	29.7	19.2	20.9	41.9
Region 9--	14.9	20.1	17.0	22.7	54.1

The relatively high percentage of land closure to deer hunting is a concern in all Regions. Closure is very high in the intensively farmed eastern counties, in Regions 2 and 5. These farms function as effective refuges from firearm hunting, particularly for females, and make it difficult to control deer numbers using firearm hunting alone. The DOC needs to work with farmers in reducing the number of farms closed to hunting in order to more effectively control deer numbers.

Question 13-- How many deer have been killed in recent years on your farm? ( A = Archery, F = Firearm)

	1986		1987		1988		1989	
	A	F	A	F	A	F	A	F
Region 1--	0.4	1.5	0.4	1.5	0.4	1.7	0.3	1.9
Region 2--	0.1	1.0	0.2	1.4	0.1	1.4	0.3	1.6
Region 3--	0.2	2.4	0.3	2.3	0.4	2.6	0.6	2.6

Region 4--	0.3	2.5	0.3	2.6	0.4	2.8	0.6	2.9
Region 5--	0.5	1.0	0.7	1.4	0.7	1.4	0.6	1.5
Region 6--	0.4	1.8	0.4	1.8	0.7	2.0	1.0	2.5
Region 7--	0.8	2.4	0.9	2.7	0.7	2.7	0.8	3.0
Region 8--	0.3	2.5	0.3	2.9	0.3	2.8	0.4	2.9
Region 9--	0.4	2.6	0.5	3.1	0.4	3.1	0.6	3.0

It would be expected that deer harvests per farm would increase with increasing numbers of deer. In 1989, less than 1 deer per farm was harvested by archers, while firearm hunters averaged 2.6 deer per hunted farm. In 1989, hunters averaged highest kills per farm in Regions 7 and 9.

Question 14-- On your farm, do you allow hunters to kill only bucks, only does, or both sexes?

	Only Bucks	Only Does	Both
	( % )		
Region 1--	11.5	0.0	88.5
Region 2--	16.7	0.0	83.3
Region 3--	7.4	0.0	92.6
Region 4--	8.1	0.0	91.9
Region 5--	8.7	0.0	91.4
Region 6--	4.1	0.0	95.8
Region 7--	5.4	0.0	94.6
Region 8--	9.2	0.0	90.8
Region 9--	6.2	0.0	93.8

The DOC needs to continue to educate farmers and others of the need to kill does in order to control herd size. Both sexes should be legal on all farms open to hunting. Buck only hunting coupled

with the number of farms closed to all deer hunting (question 12) means does are too well protected for adequate herd control using the "any deer" and "buck only" permit system.

Question 15-- How do you feel about the number of hunters who hunt deer on or near your farm? (A = Archery, F = Firearm)

	Not		About		Too Many		Don't	
	Enough		Right		Hunters		Know	
	A	F	A	F	A	F	A	F
	( % )							
Region 1--	10.8	3.7	54.7	60.1	9.3	14.1	25.2	22.1
Region 2--	8.0	3.9	43.0	46.0	17.0	20.6	32.0	29.4
Region 3--	9.0	5.9	51.6	51.8	12.9	23.2	26.5	19.1
Region 4--	15.8	10.7	53.2	51.9	11.1	21.4	19.9	16.0
Region 5--	8.6	4.5	44.5	50.8	15.6	14.9	31.3	29.9
Region 6--	13.4	12.1	43.3	42.5	15.2	17.8	28.1	27.6
Region 7--	14.7	13.7	46.6	44.3	12.3	16.9	26.4	25.1
Region 8--	13.8	8.6	43.5	55.6	14.5	14.2	28.3	21.6
Region 9--	16.9	6.1	49.1	53.3	13.2	28.3	20.8	12.2

Of concern here would be the number of farmers who feel we already have too many hunters, about 1 in 5 farmers. At a time when the DOC is allocating more permits for both archery and firearm hunters, the farmers who oppose having more hunters are likely to close their farm to these additional hunters and thus partially negate the potential harvest from an increased number of hunters. The future use of "antlerless only" type of firearm permit would help to counteract this trend, because acceptable doe harvest levels could be achieved with fewer hunters.

Question 16-- Within the past 3 years, have you experienced any problems with deer hunters on your farm?

	No Problems	Minor Problems ( % )	Serious Problems
Region 1--	66.7	28.1	5.3
Region 2--	68.1	28.9	2.9
Region 3--	58.3	35.4	6.3
Region 4--	67.0	29.4	3.6
Region 5--	75.3	20.0	4.7
Region 6--	74.3	21.2	4.5
Region 7--	68.3	27.9	3.8
Region 8--	58.3	34.3	7.4
Region 9--	60.9	32.8	6.3

At present, most farmers are not having major problems with deer hunters. A continuing education program involving hunters, landowners, and the DOC will be necessary to maintain good hunter:landowner relations. The serious violators should be prosecuted and should also forfeit their hunting privileges.

Question 17-- If you experienced problems with deer hunters, what was the nature of these problems?

	Tre- spassing &	Trash & Litter	Damage To Crops & Fence	Damage To Machinery	Damage To livestock
	( % )				
Region 1-	92.9	25.0	28.6	7.1	3.6
Region 2-	97.8	23.9	41.3	4.4	6.5
Region 3-	90.4	15.1	49.3	1.4	10.9

Region 4-	89.6	20.9	44.8	3.0	8.9
Region 5-	92.5	27.5	52.5	12.5	7.5
Region 6-	79.1	23.3	53.5	4.7	18.6
Region 7-	86.9	24.6	49.2	3.3	6.6
Region 8-	79.5	21.9	57.5	2.7	15.1
Region 9-	87.5	25.0	37.5	0.0	9.7

Trespass remains the largest problem between hunters and landowners in Illinois followed by hunter generated trash and litter, and damage to crops and/or fences.

Question 18--Have you requested a law enforcement agency(police,sheriff, conservation officer) to remove trespassing deer hunters from your farm during the past 3 deer seasons?

	Yes	No
	( % )	
Region 1--	7.6	92.4
Region 2--	7.3	92.7
Region 3--	2.3	97.7
Region 4--	3.0	96.9
Region 5--	5.2	94.8
Region 6--	3.3	96.7
Region 7--	1.6	98.4
Region 8--	5.7	94.3
Region 9--	2.1	97.9

At present most farmers appear to prefer to handle trespass problems themselves and have not called on law enforcement agencies for help.

Question 19-- Is deer poaching a problem on your farm or in the



vicinity of your farm?

	No Problems	Occasional Problems	Poaching Every Year	Don't Know
	( % )			
Region 1--	55.5	12.3	9.7	22.6
Region 2--	46.4	22.4	11.2	20.0
Region 3--	41.0	16.2	10.9	31.8
Region 4--	48.1	17.7	7.5	26.7
Region 5--	52.8	10.6	8.5	28.2
Region 6--	44.4	16.6	10.1	28.9
Region 7--	36.2	15.8	11.3	36.7
Region 8--	32.9	16.8	17.4	32.9
Region 9--	47.2	15.0	7.8	30.0

Poaching remains a significant source of deer mortality throughout the year in Illinois. As deer increase in abundance and cause more crop damage, highway accidents, etc., poaching tends to be more tolerated because farmers are seeing more deer and often want to reduce deer numbers on the farm any way they can. Based on these replies, poaching losses are highest in Regions 7 (southcentral) and 8 (southern) Illinois.

Question 20-- Have you reported deer poaching activities to a law enforcement agency within the past 3 years?

	Yes	No
	( % )	
Region 1--	4.8	95.2
Region 2--	7.6	92.4
Region 3--	5.7	94.3

Region 4--	5.1	94.9
Region 5--	6.6	93.4
Region 6--	5.0	94.9
Region 7--	8.1	91.9
Region 8--	6.6	93.4
Region 9--	3.2	96.8

Poaching often involves friends and neighbors and thus may not be reported. Poaching activities usually occur late at night when it is difficult to react fast enough to gather information for law enforcement.

Question 21-- What is your feeling about the present Illinois deer hunting seasons? (A = Archery, F = Firearm)

	Too		About		Too		Don't	
	Long		Right		Short		Know	
	A	F	A	F	A	F	A	F
	( % )							
Region 1--	9.4	6.6	58.5	55.4	15.1	23.5	16.9	14.5
Region 2--	14.4	8.7	39.2	37.0	16.0	27.6	30.4	26.8
Region 3--	9.8	4.6	50.9	48.6	20.9	33.7	18.4	13.1
Region 4--	7.5	4.1	54.3	41.2	25.3	44.9	12.9	9.8
Region 5--	9.2	2.8	47.9	42.8	14.8	24.1	28.2	30.3
Region 6--	11.4	6.7	47.2	37.4	27.8	46.4	13.6	9.5
Region 7--	10.8	3.3	50.6	40.8	24.4	42.4	14.2	13.6
Region 8--	5.9	1.8	54.9	40.4	22.9	43.9	16.3	13.9
Region 9--	10.6	5.4	59.4	56.7	16.7	27.3	13.3	10.7

Only about half of the farmers sampled are satisfied with the present archery and firearm seasons. A substantial minority of

farmers would like a longer firearm deer season in Illinois. Indeed, in Regions 4,6,7, and 8 nearly a majority of those sampled felt the firearm season should be lengthened. About 20% of the sampled farmers think the archery season is also too short although the archery season (Oct-Dec) is about as long now as is practicable ( spotted fawns found in September, visible pregnancies and antlerless bucks in January).

Question 22-- Do you lease your farm for deer hunting?

	Yes	No
	( % )	
Region 1--	0.3	99.7
Region 2--	1.2	98.8
Region 3--	0.6	99.4
Region 4--	0.5	99.5
Region 5--	0.0	100.0
Region 6--	0.0	100.0
Region 7--	0.0	100.0
Region 8--	0.0	100.0
Region 9--	0.0	!00.0

Obviously, leasing for deer hunting is not widespread in Illinois at present. Only in Region 2, close to the Chicago Metro area, are a few farmers leasing for deer hunting.

Question 23-- With the recent change in landowner liability for hunter accidents on your farm, would you be interested in leasing your farm for deer hunting in future years?

Yes	No
-----	----

( % )

Region 1--	5.9	94.1
Region 2--	5.0	95.0
Region 3--	13.6	86.4
Region 4--	11.9	88.1
Region 5--	9.2	90.8
Region 6--	9.5	90.5
Region 7--	12.2	87.8
Region 8--	10.5	89.5
Region 9--	7.9	92.1

Farmers appear to have little interest in future leasing for deer hunting in Illinois. Farmers in Regions 3,4, 7, and 8 expressed the most interest in the concept. These are hilly, forested Regions where farmers might be more receptive to additional farm income. Based on these samples, hunters are not likely to lose hunting opportunities because of exclusion from farms due to hunting leases.

Question 24--Are you in favor of the 40-acre requirement for a free landowner/tenant firearm/archery permit?

	Yes	No
	( % )	
Region 1--	73.7	26.2
Region 2--	66.7	33.3
Region 3--	74.1	25.9
Region 4--	73.9	26.2
Region 5--	71.0	28.9
Region 6--	72.5	27.5
Region 7--	69.7	30.3

Region 8--	71.2	28.8
Region 9--	75.3	24.7

Nearly 3 out of 4 sampled farmers are in favor of retention of the 40-acre requirement for a free deer hunting permit. Question 25-- If not, do you favor a change in the acreage requirement for a free landowner permit? ( Based only on those who responded no on question 24).

	Yes	No
	( % )	
Region 1--	37.5	62.5
Region 2--	36.1	63.9
Region 3--	42.5	57.5
Region 4--	64.4	35.6
Region 5--	40.0	60.0
Region 6--	54.6	45.5
Region 7--	68.5	31.5
Region 8--	70.5	29.6
Region 9--	43.9	56.1

Apparently, those who opposed the 40-acre requirement in question 24 were confused by question 25, as nearly half did not favor a change in the acreage requirement. It appears that most farmers are content with an acreage requirement for a free permit and feel the 40-acre requirement is a reasonable compromise.

In summary, a majority of illinois farmers we sampled still evidence a favorable view of deer, deer hunters, and deer hunting regulations. Future changes in deer hunting regulations that promotes a smaller deer herd, and control of hunter density through

manipulation of permits within a longer firearm season, will likely be received favorably by a majority of landowners. The DOC should consider preparation of an extension type bulletin in collaboration with the DOA that would educate landowners regarding control of deer damage. The DOC also needs to continue efforts to open as much land to firearm deer hunting as possible, if herd control is to be achieved.

A final report of this survey of owner/operators will be available in late fall, 1990, and will also include data comparison with the 1983 survey.

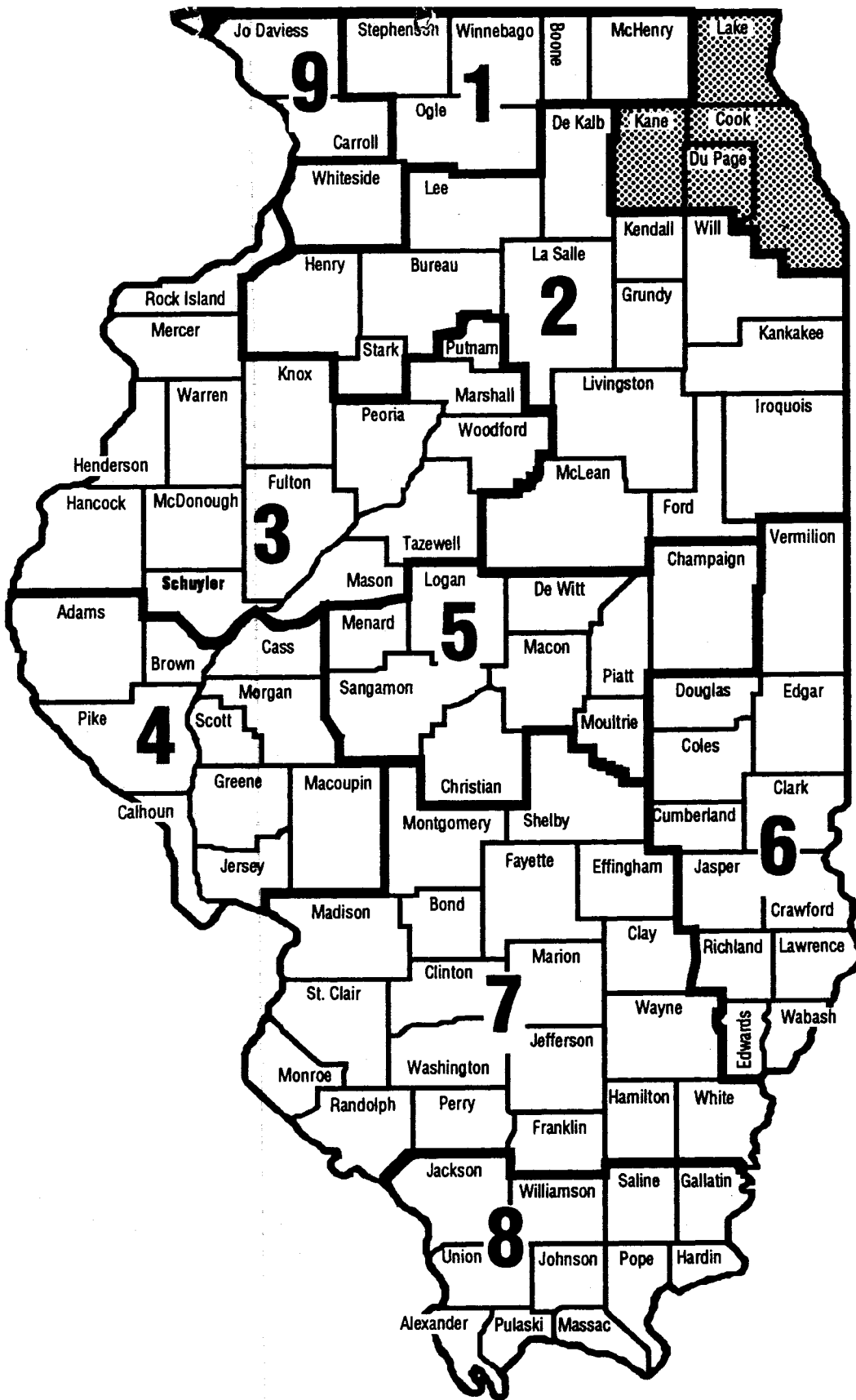


Figure 1. Regions used to stratify landowner selection for the 1990 survey of attitudes regarding deer and deer hunting.