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TRENDS IN PHEASANT ABUNDANCE IN ILLINOIS: 1958 to 1968

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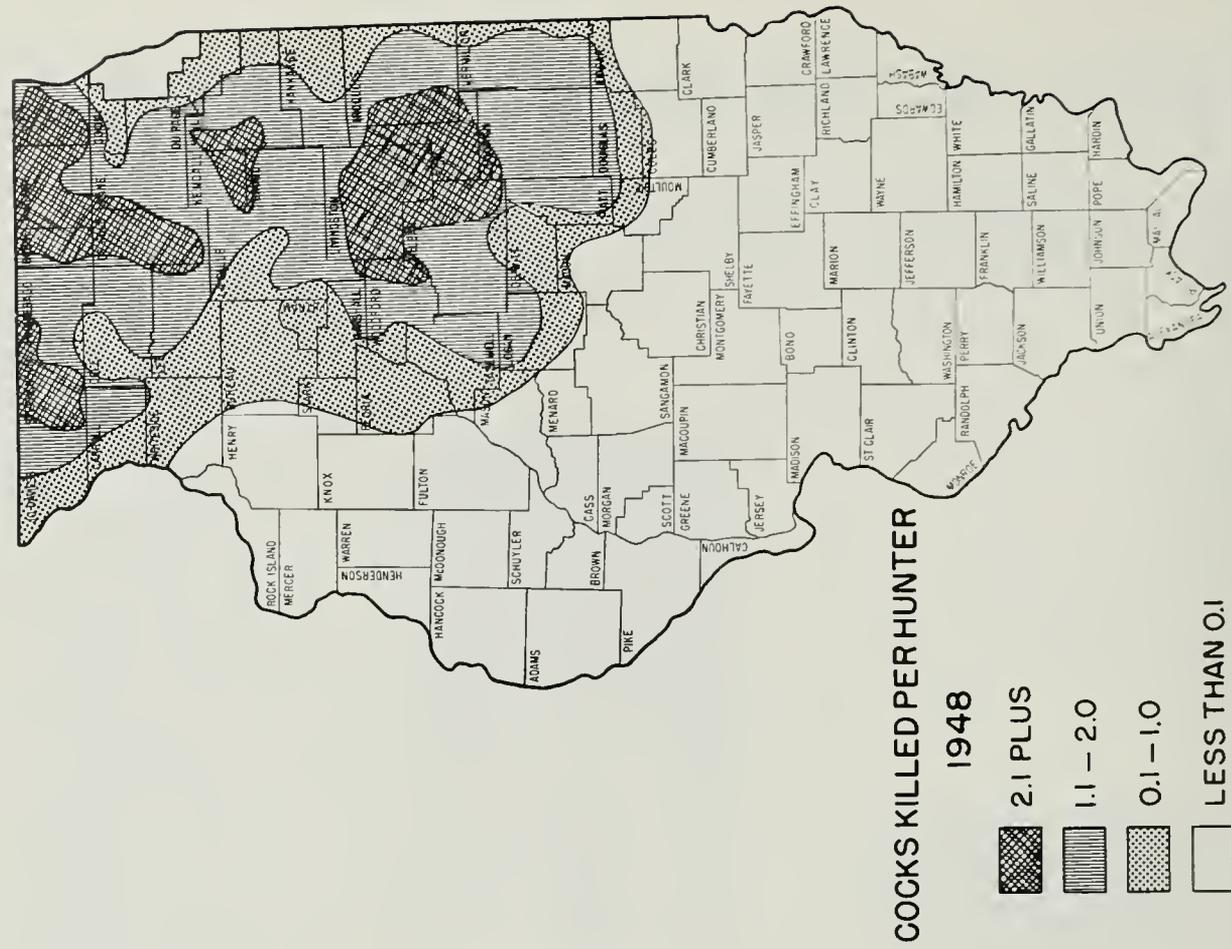
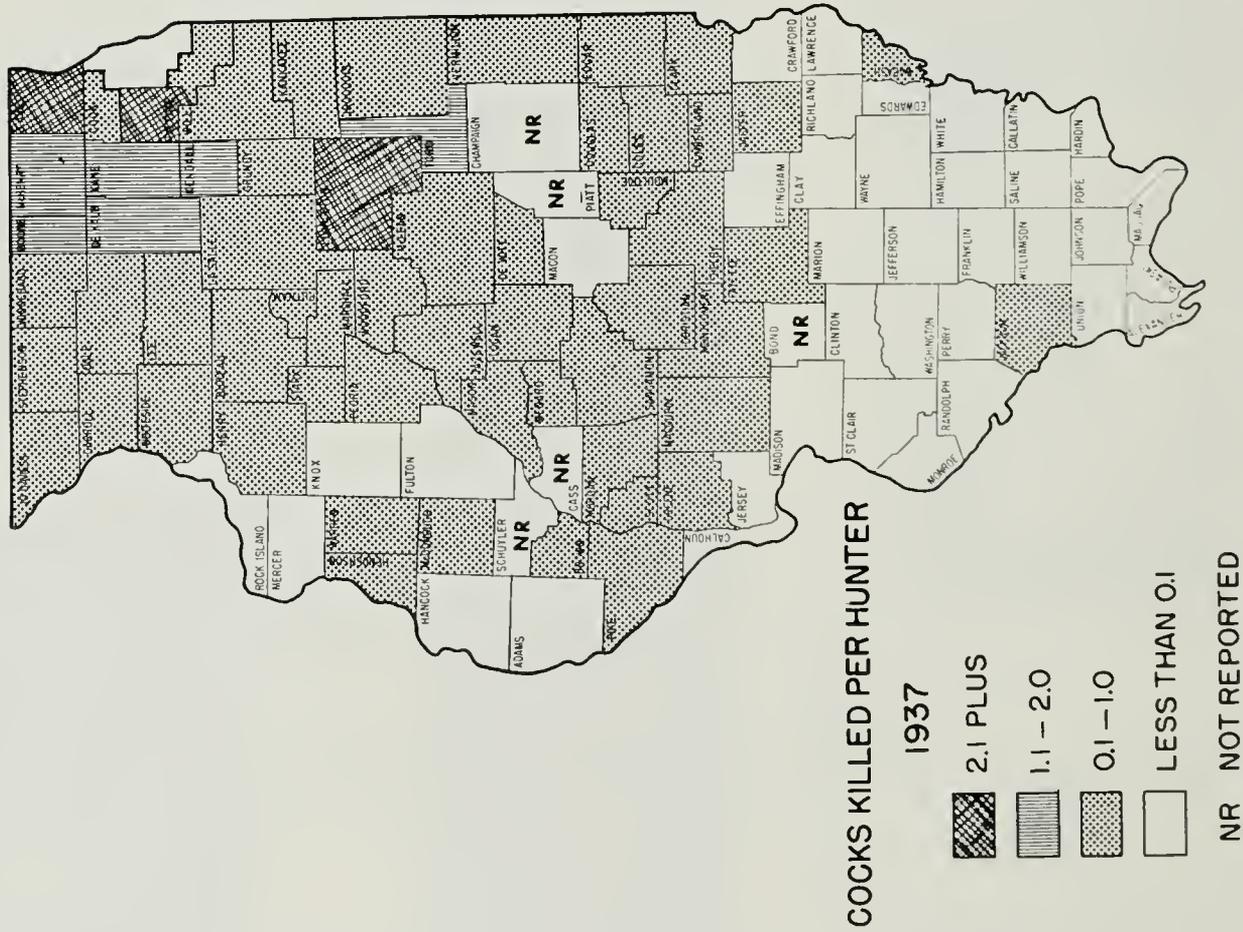


Fig. 1.—Distribution and abundance of pheasants in Illinois as mapped from data obtained from hunting license questionnaires for the 1937 pheasant hunting season (after Carl O. Mohr, unpublished) and (right) from posthunting season questionnaires distributed to hunters after the 1948 hunting season (after Robertson 1958:9). These maps probably

slightly misrepresent statewide pheasant distribution because some hunters very likely reported their seasonal kill of cocks for their counties of residence rather than for the counties where they hunted.

Trends in Pheasant Abundance in Illinois: 1958 to 1968

Ronald F. Labisky

The pheasant (*Phasianus colchicus*), first introduced into Illinois about 75 years ago (Robertson 1958:3), has established thriving populations in northern and east-central Illinois. It has never established permanent populations in the west-central and southern counties of the state. Although the pheasant has exhibited shifting patterns of population density within its occupied range in the state, it has persistently maintained its center of abundance in the cash-grain region of east-central Illinois since the mid-1930's (Fig. 1; Greeley *et al.* 1962:13-16; Labisky & Anderson 1965:128). The rapid increase in the acreage of row crops (corn and soybeans) in the east-central sector of the state during the 1960's (Joselyn *et al.* 1968:217-218) has resulted in a marked reduction of pheasant nesting cover, particularly tame hay and small grains. These land-use changes have adversely affected pheasant abundance in this region (Labisky 1968:353-389).

The purpose of this paper is to document the patterns of distribution and abundance of pheasants in Illinois for 1968 and to compare these findings with similar statistics from 1958 and 1963. Some data from the 1958 and 1963 censuses have been presented, in part, in previous publications (Greeley *et al.* 1962; Labisky & Anderson 1965).

ACKNOWLEDGMENTS

The author extends his sincere appreciation to the hundreds of postmasters and rural mail carriers in Illinois who voluntarily participated in the 1968 and previous pheasant censuses and whose cooperation was outstanding.

Clifford Edwards, President (Enfield, Ill.), and Vernon Maier, Secretary (Clifton, Ill.), Illinois Rural Letter Carriers Association, offered advice in organizing the 1968 census. Officials of the U.S. Post Office Department, M. L. Stover (Washington, D.C.) and Donald L. Swanson and Norbert P. O'Donnell (Chicago), expedited the project in numerous ways.

William L. Preno, Illinois Department of Conservation, Springfield, and my Illinois Natural History Survey colleagues, William L. Anderson and Glen C. Sanderson, read the manuscript. Richard M. Sheets, Survey Illustrator, prepared the maps and designed the cover. Robert M. Zewadski, Survey Associate Editor, edited the manuscript. Dawn A. Labisky assisted in assembling the materials for distribution to the postmasters and rural mail carriers.

METHODS

Statistics on the distribution and abundance of pheasants reported in this paper were *voluntarily* col-

lected by rural mail carriers during 5-day census periods in April of 1958, 1963, and 1968. These censuses were restricted to the 74 northernmost counties of the state; Greeley *et al.* (1962:14), after conducting a statewide census in 1957, conservatively classified the remaining 28 of Illinois' 102 counties as nonpheasant range. The censuses were conducted in April because Greeley *et al.* (1962:5) concluded: "The conditions for observing pheasants [in Illinois] are probably more nearly constant from year to year in April than in any other month." The specific 5-day census periods (Monday through Friday) were April 21-25 in 1958 and April 22-26 in 1963 and 1968. The daily census period was between 8 AM and noon (CST) in all years.

Approximately 5 days preceding each of the censuses, a packet of materials relating to the census was mailed to the postmaster of each post office having one or more rural routes in the 74 counties to be censused. The packet contained a letter of instruction to the postmaster and a letter of instruction plus a postal-card questionnaire for each rural mail carrier. The postmaster was requested to distribute the latter to each of his rural carriers. Each carrier was asked to report the counties and political townships in which his route was located, the length of his route in miles, and the number of pheasants (cocks and hens) observed along the route on each of the 5 consecutive days specified in the instructions.

The number of miles driven and the number of pheasants seen during the 5-day census period were used to calculate the number of pheasants observed per 100 miles of driving in each township and county. When the route of a mail carrier extended into two or more townships, the number of miles driven and number of pheasants observed were divided equally among the number of townships that he reported on his questionnaire. The variables that influence the counts of pheasants by rural mail carriers have been discussed by Greeley *et al.* (1962:4-5).

The information reported by mail carriers during each census was the result of the initial request only; follow-up mailings to prompt the return of questionnaires were unnecessary (Table 1). To exemplify, in 1968, 97 percent of all returned questionnaires had been received by May 1—only 5 days after the last day of the census period. After each census all postmasters and mail carriers participating in the census were sent a summary of the census findings and a letter thanking them for their cooperation.

FINDINGS

The relative abundance of pheasants in the 74 northernmost counties of Illinois increased from 7.6 to 9.9 pheasants observed per 100 miles of driving (30 percent) between April, 1958, and April, 1963, and then declined to 5.5 birds per 100 miles (44 percent) by

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Table 1.—Comparative statistics obtained from rural mail carrier censuses of pheasants in the 74 northernmost counties (including 1,257 townships) of Illinois during designated 5-day census periods in April of 1958, 1963, and 1968.

Category	April, 1958	April, 1963	April, 1968
Questionnaires mailed	1,368	1,320	1,256
Number returned	1,053(77) ^o	1,202(91)	1,143(91)
Number usable (of total)	†	1,150(87)	1,105(88)
Number of townships reported (of 1,257)	1,221(97)	1,222(97)	1,214(97)
Total miles driven	250,129‡	318,605	333,070§
Miles driven per township reported	205	261	268
Cocks observed	10,047‡	17,204‡	10,706
Hens observed	9,044‡	14,466	7,545
Total pheasants observed	19,091‡	31,670‡	18,251
Sex ratio:			
hens per cock	0.9	0.8	0.7
Cocks per 100 miles	4.0‡	5.4	3.2
Hens per 100 miles	3.6‡	4.5	2.3
Total pheasants per 100 miles	7.6‡	9.9	5.5

^o Percentages are given in parentheses.

† Data are not available.

‡ These figures are slightly different from those appearing in Labisky and Anderson (1965:129, Table 1); the figures in the earlier publication were in error.

§ 8,233 miles of driving were, for the lack of township designations, assigned only to counties.

April, 1968 (Table 1). Statistics for hens only, employed to avoid sex-ratio differences among years, revealed similar trends in abundance. The number of hens observed per 100 miles increased from 3.6 in 1958 to 4.5 in 1963 (25 percent) and then declined to 2.3 hens per 100 miles in 1968 (49 percent). Thus, pheasants increased in abundance by about one-fourth between 1958 and 1963 and declined in numbers by almost one-half in the succeeding 5 years, 1964–1968. Pheasants were only about three-fourths as abundant in 1968 as in 1958.

Although the overall trend in pheasant abundance in Illinois during the past decade was downward, not all portions of the occupied range suffered declines in abundance. In fact, the pheasant range can be separated into three major sectors with respect to changes in abundance that have occurred within the past 10 years. The east-central portion of the state showed substantial gains (about 50 percent) in abundance between 1958 and 1963; however, the marked decline (about 60 percent) in abundance between 1963 and 1968 more than cancelled the earlier gains, resulting in a net loss of pheasants in Illinois' prime range (Table 2; Fig. 2–4). All counties of northern Illinois, except Carroll, were characterized by substantial losses in pheasant abundance between 1958 and 1968; the losses incurred between 1958 and 1963 were particularly severe. In contrast, the southern and southwestern portions of the range occupied by pheasants in Illinois were characterized by very substantial gains in abundance between 1958 and 1968.

Table 2.—Relative abundance of pheasants as reported by rural mail carriers in the 74 northernmost counties of Illinois in April 1958, 1963, and 1968. The remaining 28 counties, located in southern Illinois, are not occupied by pheasants.

County	County Rank			Total Pheasants Reported			Pheasants Per 100 Miles			Percentage Change Per 100 Miles		
	1958	1963	1968	1958	1963	1968	1958	1963	1968	1958 to 1963	1963 to 1968	1958 to 1968
Livingston	1	1	1	3,634	8,181	3,006	56.4	99.1	33.3	+76	-66	-41
Logan	16	17	2	305	345	1,543	8.3	9.7	31.1	+17	+221	+275
Ford	2	2	3	1,569	2,696	1,144	50.7	75.8	29.2	+50	-61	-42
Woodford	7	7	4	718	852	787	15.6	21.8	21.4	+40	-2	+37
Moultrie	37	15	5	27	301	554	1.4	11.3	18.1	+707	+60	+1,193
Piatt	12	6	6	305	986	402	11.8	34.6	17.7	+193	-49	+50
McLean	4	4	7	2,071	3,868	1,324	27.7	43.1	17.0	+56	-61	-39
Champaign	5	5	8	1,641	3,018	1,371	25.7	35.6	16.8	+39	-53	-35
Iroquois	3	3	9	1,991	3,674	1,373	28.9	43.4	15.7	+50	-64	-46
De Witt	19	11	10	190	547	405	6.5	16.1	12.2	+148	-24	+88
Putnam	13	9	11	81	131	105	10.8	19.1	10.6	+77	-44	-2
Kankakee	8	8	12	706	973	538	15.3	19.7	10.1	+29	-49	-34
Vermilion	6	16	13	966	728	632	17.3	11.1	9.8	-36	-12	-43
Grundy	10	10	14	323	429	283	12.5	17.7	9.3	+42	-47	-26
La Salle	11	14	15	873	1,233	820	12.4	13.8	9.1	+11	-34	-27
Douglas	15	13	16	204	487	244	8.7	14.3	8.6	+64	-40	-1
Macon	42	19	17	27	326	421	0.7	6.6	8.5	+843	+29	+1,114
Marshall	9	12	18	328	395	176	14.6	15.0	8.2	+3	-45	-44
De Kalb	14	21	19	367	261	396	10.4	5.2	8.0	-50	+54	-23
Tazewell	21	18	20	284	343	356	6.1	8.5	6.5	+39	-24	+7
Mason	30	20	21	66	148	184	2.7	5.4	6.4	+100	+19	+137
Edgar	24	24	22	190	214	258	5.0	4.2	5.3	-16	+26	+6
Kendall	17	22	23	135	131	148	7.4	4.8	5.0	-35	+4	-32
Christian	52	32	24	9	67	204	0.2	1.2	3.5	+500	+191	+1,650
McHenry	18	25	25	280	200	183	7.0	3.9	3.4	-44	-13	-51
Coles	31	29	26	60	86	128	2.0	2.3	3.2	+15	+39	+60
Lee	20	26	27	243	147	131	6.2	3.1	2.8	-50	-10	-55
Will	26	27	28	208	179	181	4.6	3.0	2.7	-35	-10	-41

The drastic decline in pheasant abundance in east-central Illinois, which has harbored perhaps as many as two-thirds of the state's pheasant population during the past 30 years, is of critical interest. In both 1958 and 1963, the east-central counties of Livingston, Ford, Iroquois, McLean, and Champaign were, in that order, the five top-ranked counties with respect to relative abundance of pheasants (Table 2). The relative abundance of pheasants observed in these counties, collectively, was 37.9 and 59.4 birds per 100 miles in 1958 and 1963, respectively. In 1968, these same five counties had a collective relative density of 22.4 pheasants per 100 miles, a decline of 62 percent from 1963. Fur-

thermore, by 1968 McLean, Champaign, and Iroquois counties had slipped from their traditional positions among the five top-ranked counties to occupy positions 7, 8, and 9, respectively. Notably, the only segment of range in Illinois to register a measure of abundance exceeding 100 pheasants per 100 miles of driving in 1958, 1963, and 1968 was that located at the junction of Champaign, Vermilion, Douglas, and Edgar counties (Fig. 2-4).

Northern Illinois, characterized by secondary centers of pheasant abundance in the 1940's (Fig. 1), has, in the intervening years, suffered a greater proportionate loss in pheasant numbers than any other sector of the

Table 2.—(Continued)

County	County Rank		Total Pheasants Reported			Pheasants Per 100 Miles			Percentage Change Per 100 Miles			
	1958	1963	1968	1958	1963	1968	1958	1963	1968	1958 to 1963	1963 to 1968	1958 to 1968
Menard	43	34	29	8	18	49	0.6	1.0	2.3	+67	+130	+283
Boone	23	35	30	112	21	35	5.1	1.0	2.3	-80	+130	-55
Ogle	35	41	31	76	26	119	1.5	0.5	2.0	-67	+300	-33
Carroll	33	33	32	40	39	65	1.9	1.1	2.0	-42	+82	+5
Kane	28	28	33	116	98	67	3.6	2.7	1.7	-25	-37	-52
Sangamon	47	38	34	17	43	101	0.3	0.6	1.5	+100	+150	+400
Cook	29	30	35	92	61	54	2.8	1.6	1.4	-43	-12	-50
Cass	53	36	36	4	18	32	0.2	0.8	1.2	+300	+50	+500
Du Page	25	23	37	93	117	35	4.9	4.3	1.2	-12	-72	-76
Lake	32	31	38	60	66	54	2.0	1.2	1.1	-40	-8	-45
Bureau	38	42	39	66	29	70	1.3	0.5	1.0	-62	+100	-23
Winnebago	36	37	40	46	22	39	1.5	0.6	1.0	-60	+67	-33
Stephenson	22	44	41	201	18	38	5.4	0.3	0.9	-94	+200	-83
Whiteside	48	47	42	15	13	39	0.3	0.3	0.8	0	+167	+167
Shelby	54	39	43	11	35	40	0.2	0.5	0.7	+150	+40	+250
Morgan	57	48	44	2	5	14	0.1	0.2	0.4	+100	+100	+300
Mercer	55	43	45	2	15	14	0.1	0.5	0.4	+400	-20	+300
Henry	34	46	46	88	19	16	1.8	0.3	0.3	-83	0	-83
Montgomery	60	54	47	3	4	16	0.1	0.1	0.3	0	+200	+200
Jo Daviess	39	45	48	37	15	11	1.2	0.3	0.2	-75	-33	-83
Stark	27	40	49	63	9	7	4.2	0.5	0.2	-88	-60	-95
Macoupin ^o		59	50	0	1	8	0.0	0.0+	0.1	-†	+	+
Cumberland	50	58	51	6	2	3	0.3	0.1	0.1	-67	0	-67
Fulton	64		52	1	0	5	0.0+	0.0	0.1	-	+	+
Rock Island	59	52	53	3	2	3	0.1	0.1	0.1	0	0	0
Peoria	46	49	54	16	6	3	0.4	0.1	0.1	-75	0	-75
Knox	62	57	55	2	3	2	0.0+	0.1	0.1	+	0	+
Effingham	41	56	56	24	2	2	0.8	0.1	0.0+	-	-	-
Henderson	45		57	10	0	1	0.5	0.0	0.0+	-	0	-
Hancock			58	0	0	2	0.0	0.0	0.0+	0	+	+
Jasper	40	50	59	33	4	2	1.0	0.1	0.0+	-	-	-
Warren	49	55	60	9	3	2	0.3	0.1	0.0+	-	-	-
Crawford			61	0	0	1	0.0	0.0	0.0+	0	+	+
Adams			62	0	0	1	0.0	0.0	0.0+	0	+	+
McDonough	44		63	19	0	1	0.6	0.0	0.0+	-	+	-
Bond			64	0	0	1	0.0	0.0	0.0+	0	+	+
Clark	56	51	65	3	5	1	0.1	0.1	0.0+	0	-	-
Fayette	61		66	4	0	1	0.1	0.0	0.0+	-	+	-
Clay	51			5	0	0	0.3	0.0	0.0	-	0	-
Greene	58	53		2	3	0	0.1	0.1	0.0	0	-	-
Jersey		60		0	1	0	0.0	0.0+	0.0	+	-	0
Madison†		61		0	1	0	0.0	0.0+	0.0	+	-	0
Pike	63			1	0	0	0.0+	0.0	0.0	-	0	-
Brown				0	0	0	0.0	0.0	0.0	0	0	0
Schnyler				0	0	0	0.0	0.0	0.0	0	0	0
Scott				0	0	0	0.0	0.0	0.0	0	0	0

^o No rank was assigned to counties from which pheasants were absent in year of census.

† Percentage change presented only as + (gain), - (loss), or 0 (no change) for those counties from which pheasants were reported absent (including 0.0 +) in any of the three census periods.

‡ Richland County was censused in place of Madison County in 1958.

state's pheasant range (Fig. 2-4). Although the pheasant population in northern Illinois had already declined by 1958, it diminished even more during the past decade. The abundance of pheasants in all counties of northern Illinois, except Carroll, diminished substantially between 1958 and 1968; losses in abundance during these 10 years exceeded 50 percent in Jo Daviess, Stephenson, Boone, McHenry, Kane, Cook, Du Page, Lee, Henry, and Stark counties (Table 2). Pheasant populations in northern Illinois would have plummeted even lower had not such counties as Carroll, Stephenson, Winnebago, Boone, De Kalb, and Ogle actually registered gains in abundance between 1963 and 1968.

The most spectacular change in pheasant abundance that has occurred in Illinois within the past decade has been the increase in pheasant numbers in a block of nine counties—Logan, Moultrie, De Witt, Macon, Mason, Christian, Menard, Sangamon, and Cass—situated south and southwest from east-central Illinois. Increases in abundance among these nine counties, all of which had densities of more than one pheasant per 100 miles of driving in 1968, ranged from twofold to sixteenfold during the 10 years, 1958-1968 (Table 2; Fig. 2-4). Notably, two of these counties—Logan and Moultrie—advanced from their respective county rankings of 16 and 37 in 1958 to rankings of 2 and 5 in 1968; these advances in ranking were due not only to gains in abundance recorded in the two counties but also to declines in abundance in many of

the previously top-ranked counties. Several counties that adjoin the nine-county sector, namely Piatt, Tazewell, Edgar, and Coles, also posted substantial, though proportionately smaller, gains in pheasant abundance during the past decade.

No decisive spread of pheasants into unoccupied range along the southern and western boundaries of the contiguous pheasant range has occurred within the past decade (Fig. 2-4). Yet pheasant abundance in many segments of this so-called "marginal" range, particularly in the south, has increased in recent years. The several small populations of pheasants beyond the contiguous range could be precursory, self-maintaining flocks, but are probably the artifacts of local releases of artificially propagated birds.

DISCUSSION

Examination of records documenting the distribution and abundance of pheasants since their introduction into Illinois (Greeley *et al.* 1962), leaves little doubt that the state's all-time high in pheasant abundance was attained in 1962 or 1963. This conclusion is substantiated by the fact that the calculated autumn kill of cocks by hunters in Illinois was greater in these years—989,000 in 1962, and 1,066,000 in 1963—than in any preceding or following year through 1968 (William L. Preno, Illinois Department of Conservation, unpublished). The low in pheasant numbers in Illinois during the past

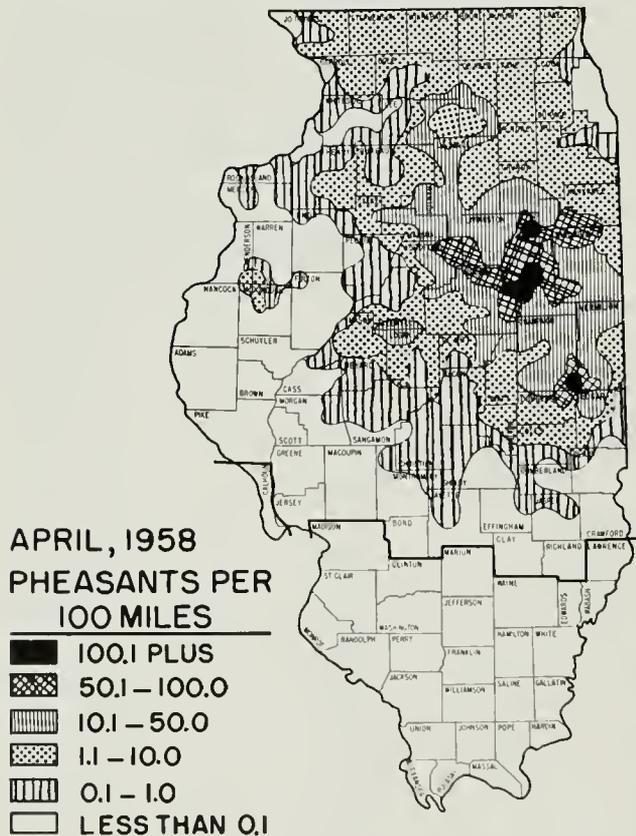


Fig. 2.—Distribution and abundance of pheasants in Illinois as mapped from township statistics obtained by a rural mail carrier census, April, 1958 (after Labisky and Anderson 1965). Counties below the heavy line were not censused.

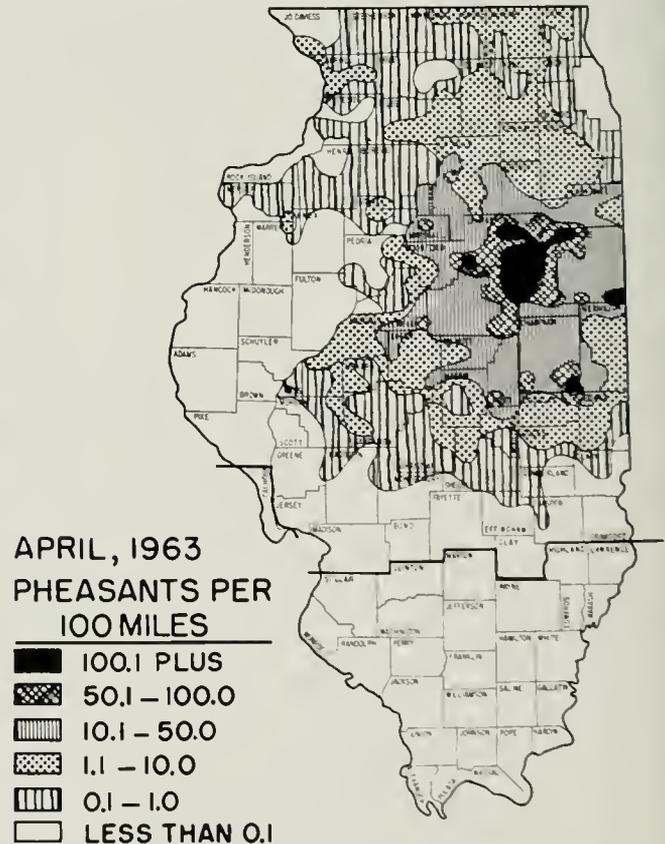


Fig. 3.—Distribution and abundance of pheasants in Illinois as mapped from township statistics obtained by a rural mail carrier census, April, 1963 (after Labisky and Anderson 1965). Counties below the heavy line were not censused.

decade occurred in 1966; the 1968 breeding population was estimated to be about 10 percent above that of 1966 (William L. Preno, unpublished).

In the 5 years following the pheasant high of 1963, the abundance of pheasants in Illinois declined by about 50 percent. Much of this decline in abundance,

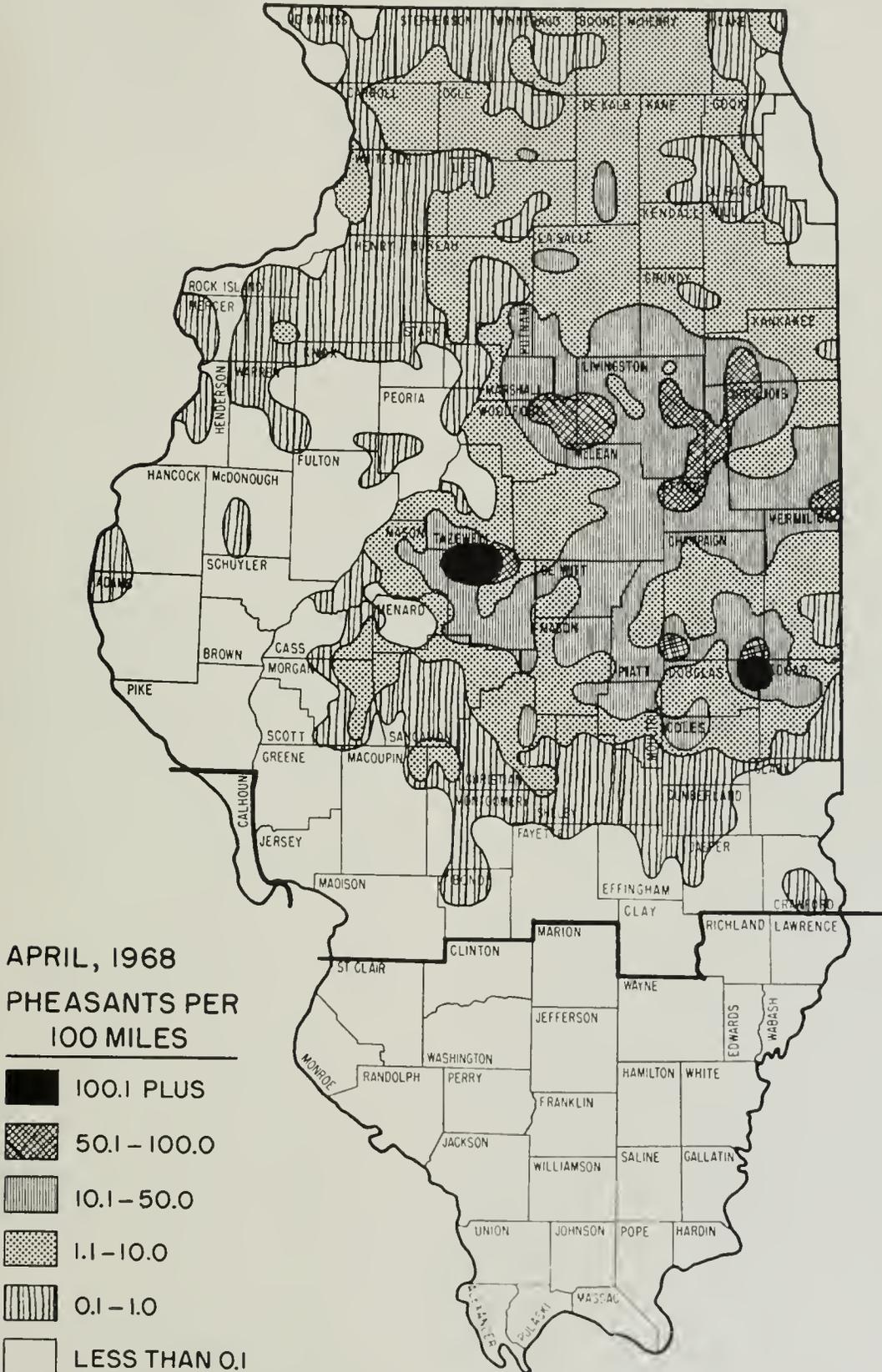


Fig. 4.—Distribution and abundance of pheasants in Illinois as mapped from township statistics obtained by a rural mail carrier census, April, 1968. Counties below the heavy line were not censused.

particularly in the prime pheasant range in east-central Illinois, resulted from the rapid decrease in acreages of tame hays and other suitable nesting habitats. The increase in acreages planted to the major cash-grain crops, corn and soybeans, has brought about this decrease in nesting habitats (Labisky 1968:353-389; Joselyn *et al.* 1968:217-218). The drought of 1964 depressed pheasant production and also contributed to the decline in abundance.

It is most unlikely that substantial gains in pheasant abundance will occur in east-central Illinois in future years unless there is a reversal of agricultural trends, which seems most improbable. In fact, it is doubtful that pheasants will be able to maintain existing population levels for long under today's farming practices. To illustrate, the obvious fragmentation of Illinois' good pheasant range in 1968, as evidenced by the interspersed areas of lower pheasant abundance with those of higher abundance (Fig. 4), suggests that further declines in abundance will be forthcoming. Livingston County, the top-ranked pheasant county in the state, shows signs of being cleaved from northwest to southeast by a trough of lower pheasant abundance. Other top-ranked counties, notably Champaign, Iroquois, and McLean, exhibited noticeable range fragmentation between 1963 and 1968 (Fig. 3 and 4).

In 1968 the only sector of pheasant range in the state showing encouraging increases in pheasant numbers was in that block of counties (Logan, Moultrie, De Witt, Macon, Mason, Christian, Menard, Sangamon, and Cass) constituting the southwestern portion of Illinois' occupied pheasant range. Gains in pheasant numbers in this area, much of which was classified as mediocre to poor with respect to abundance as recently as the early 1960's, were unusually great (Table 2; Fig. 2-4). In fact, within this sector of pheasant range a secondary center of abundance has appeared in northern Logan County. Not only did this southwest sector of range contain more pheasants in 1968 than it ever had, but it also contained the highest density of pheasants ever recorded along such a broad front so far south in Illinois. Similarly, a surge in pheasant abundance, beginning in the late 1950's, occurred in an area of traditionally poor pheasant range in southwestern Iowa (Klonglan 1962); this buildup in pheasant numbers has already persisted for a decade.

A decisive southward shift in pheasant abundance has occurred in Illinois from 1948 to 1968. Northern Illinois, which contained strong secondary centers of pheasant abundance in the late 1940's, had, by 1968, exhibited greater proportionate declines in pheasant numbers than any other major region of the state. As pheasant abundance declined in northern Illinois, it increased in the prime range of east-central Illinois—reaching an all-time high about 1963. Yet in 1968, east-central Illinois, despite sustaining a 60-percent decline in the pheasant population from that of 1963, still contained the state's center of pheasant abundance as it had in the preceding 30 years. However, during the 1960's a comparatively spectacular gain in abundance occurred in a large and contiguous segment of range

located south-southwestward from east-central Illinois and north of the southern boundary of the contiguous pheasant range in Illinois. If pheasant abundance continues to dissipate in east-central Illinois as a result of current agricultural practices, the southwestern portion of range may replace east-central Illinois as the state's center of pheasant abundance. Even though population abundance has increased along the southernmost boundary of the pheasant's range in Illinois in recent years, there has been no real southward extension of the bird's range in the state.

SUMMARY

The relative abundance of pheasants per 100 miles of driving in the 74 northernmost counties of Illinois, as reported by rural mail carriers during April censuses, was 7.6 in 1958, 9.9 in 1963, and 5.5 in 1968. Thus, pheasants increased in abundance by about 30 percent between 1958 and 1963 and then declined by about 44 percent between 1963 and 1968. The all-time high in pheasant abundance in Illinois was probably reached in 1962 or 1963.

Although the number of pheasants in Illinois has declined during the past decade, not all portions of the state's pheasant range have suffered similarly. Pheasant abundance in east-central Illinois, the state's prime pheasant range since the 1930's, increased about 50 percent between 1958 and 1963 and then declined by about 60 percent between 1963 and 1968. Pheasants in northern Illinois were less than half as abundant in 1968 as in 1958. In contrast, a severalfold increase in pheasant abundance occurred between 1958 and 1968 in a large, contiguous unit of range immediately south-southwestward from east-central Illinois.

Notably, Illinois has experienced a significant, progressive southward shift in pheasant abundance within the past 20 years. Yet, despite the recent surge in pheasant abundance in the southern portion of the range occupied by pheasants, there has been no permanent southward extension of the birds' range in the state.

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