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Crowing Cock Count

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Iowa State Conservation Commission

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Crowing Cock Count

By RICHARD C. NOMSEN

The crowing cock count is one of the major techniques used to census the pheasant population in Iowa. Together with the roadside census (Bennett and Hendrickson, 1938) and the rural mail carrier count, it forms the basis of determining the pheasant population indices. Successful in estimating the numbers of mourning doves in Nebraska by counting their calls, McClure (1944) devised a system of counting pheasant calls as an index to their population levels. At first, aerial bombs of the fireworks variety were detonated to increase the intensity of the calls. In a later study (McClure, 1945) one minute counts during the peak of crowing were found to be sufficient without detonations. Presently most workers (Ginn, 1950, etal) are using two minute counts at the peak of the crowing season on predetermined routes.

The procedure for making the counts as outlined by Kimball (1949) of South Dakota and modified somewhat to meet Iowa conditions have been used in collecting the data presented in this paper. Using the entire force of 54 Conservation Officers and the personnel of the biology department, it is possible to census every county in Iowa (99) in a period of from four to six days. While the system is not without faults (Smith, 1949) it is considered an accurate index of the spring pheasant population. It can be accomplished in a minimum of time and with comparatively little expense.

The three years of data, covering the years 1950, 1951, and 1952 compares favorably with population levels determined by the roadside census and other methods of measurements, as well as with the hunting success records.

ESTABLISHMENT OF ROUTES AND STOPS

A total of 198 routes, two for each of the 99 counties, were established in the State. The routes for each county were set up to sample the area containing a low population as well as the better pheasant range. Each route is twenty miles long with twenty stops—each about one mile apart.

SEASONAL AND DAILY VARIATION OF CROWING INTENSITY

In Iowa, cock pheasants begin crowing late in March. The crowing activity increases gradually until the peak of crowing is

DAILY CROWING VARIATION

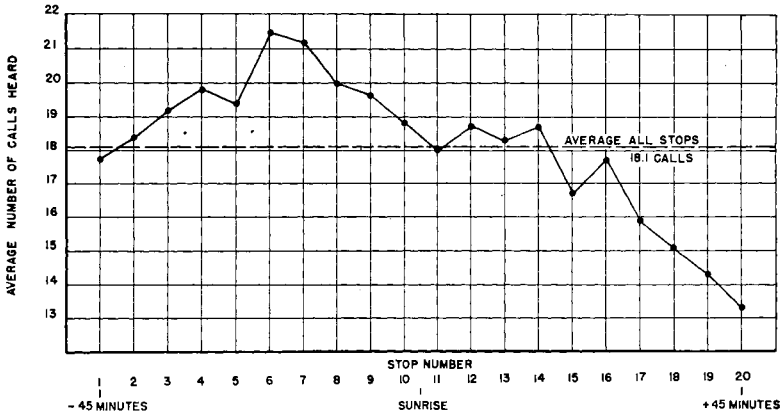


Figure 1

reached in late April. This period of maximum crowing is determined by check routes established in central and northern Iowa.

When the peak of crowing has been reached, the officers are notified to begin their state-wide counts. The period of maximum crowing will last for at least three weeks.

There is also a daily variation of crowing intensity that must be considered (See Figure 1). Data for this graph was obtained from 68 census routes that were checked on mornings with no wind velocity change from beginning to end of count. The number of calls heard at each stop on all routes were averaged and plotted on the graph. The average number of calls heard at all 1,360 stops was 18.1. The stops at the beginning of the routes were slightly above average. The highest averages per stop were recorded between twenty and thirty minutes before sunrise. Crowing intensity decreased from that time on. The decline becomes more rapid near the end of the count. This points out the importance of beginning the count on time and to complete the route on schedule.

Even during the peak crowing period, weather conditions must be favorable for the count. The most important factor is wind. Checks have shown that winds over eight miles per hour sharply reduce the number of calls heard, and that counts should not be taken. Officers are instructed not to take the count during periods of unsettled weather conditions such as snow, rain, or heavy fog.

Weather conditions are recorded at each end of the route.

PROCEDURE FOR COUNT

The count is started at forty-five minutes before sunrise at stop number one. The car motor is turned off and the officer steps out and counts calls for two minutes. No noise should be made to stimulate crowing activity. The time to the nearest minute and the number of calls heard are recorded before driving to the next stop where the same procedure is repeated. If roads are in good condition, the count can be completed in the ninety minutes by driving 40-45 miles per hour between stops. The same routes and stops are repeated each year so that results are comparable.

PHEASANT DISTRIBUTION AND INDEX OF SPRING POPULATIONS

Pheasant distribution and population densities can be pictured on a state-wide basis by plotting the data obtained from this survey on a map. Successive groups of five stops are averaged and the results marked along each route. A single route is then represented by four figures which indicate the population densities. The various population densities are shown by lines drawn along the different intervals, similar to a contour map. Figures 2, 3, and 4 list the intervals used and show the results of the crowing cock count for the three years.

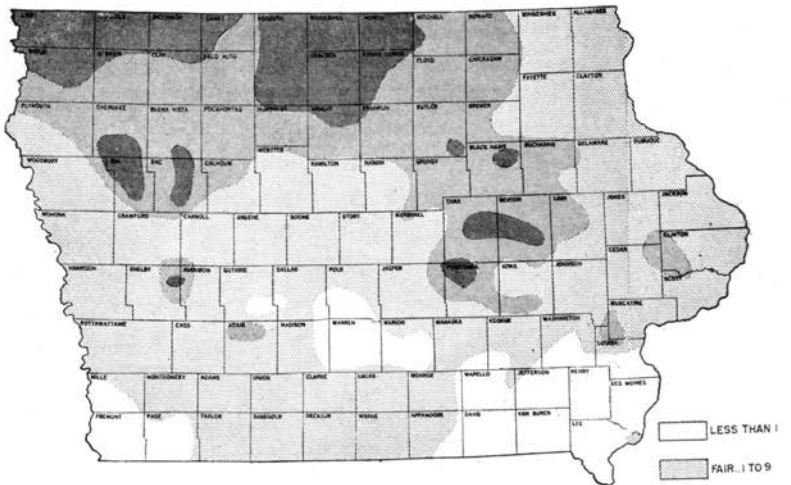
PHEASANT COCK CROWING COUNT
1950

Figure 2

PHEASANT COCK CROWING COUNT 1951

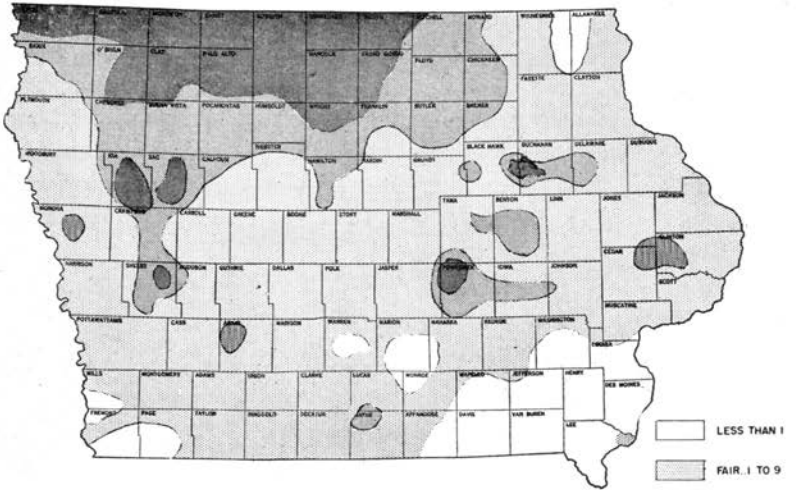


Figure 3

PHEASANT COCK CROWING COUNT 1952

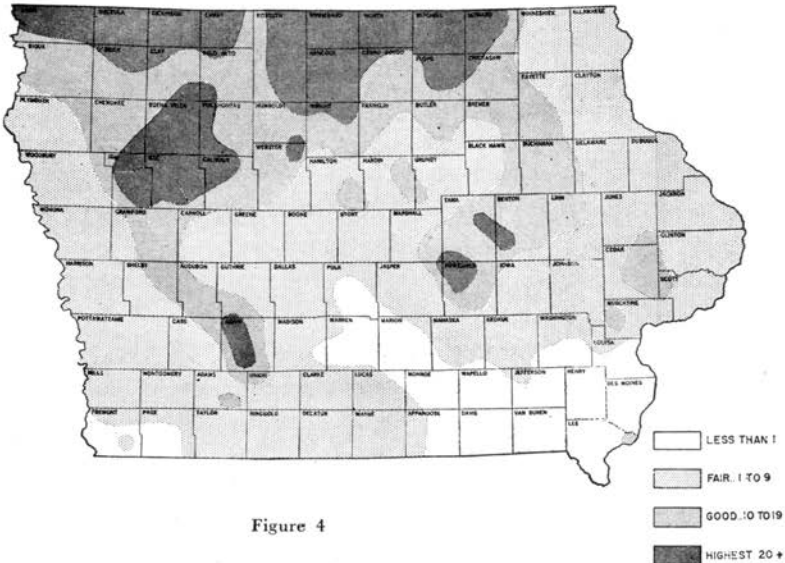


Figure 4

Since the pheasant cock crowing count indicates only the male population, hens must be added to complete the picture. The sex ratio, stated as hens per cock, changes from year to year depending upon the percentage of male birds shot the previous hunting season. Data for observed sex ratios are obtained each winter from the Conservation Officers sight record project (Nomsen, mimo.). These counts are taken during January and February when there is sufficient snow to cover the ground. The officers record all hen and cock pheasants seen in their territories. A large sample is possible at this time because the birds are concentrated in farm

Table 1
Results of Spring Crowing Cock Count.
1950 1951 1952

Agricultural District	Year	Number of stops	Number of calls heard	Av. No. of calls per stop	Winter Sex Ratio Hens per Cock	Index of Spring Hen Population
1. North West	1950	428	7993	18.7	2.4	44.9
	1951	460	8947	19.4	2.4	46.6
	1952	480	8990	18.7	2.7	50.5
2. North Central	1950	397	7424	18.7	3.0	56.1
	1951	432	8238	19.1	3.1	59.2
	1952	440	8795	20.0	3.0	60.0
3. North East	1950	433	3277	7.6	3.4	25.8
	1951	409	3068	7.5	3.5	26.3
	1952	422	3273	7.7	2.3	17.7
4. West Central	1950	440	3399	7.7	2.0	15.4
	1951	471	3899	8.3	2.2	18.3
	1952	480	5048	10.5	2.0	21.0
5. Central	1950	480	3450	7.2	3.2	23.0
	1951	479	2629	5.5	2.8	15.4
	1952	480	3670	7.6	2.9	22.0
6. East Central	1950	360	2435	6.8	3.5	23.8
	1951	398	2215	5.6	3.5	19.6
	1952	398	2814	7.1	2.1	14.9
7. South West	1950	360	826	2.3	*1.5	3.6
	1951	360	1082	3.0	*1.5	4.5
	1952	340	2266	6.7	*1.5	10.1
8. South Central	1950	440	685	1.6	*1.5	2.4
	1951	438	1015	2.3	*1.5	3.5
	1952	440	1141	2.6	*1.5	3.9
9. South East	1950	440	339	0.8	*1.5	1.2
	1951	440	247	0.6	*1.5	0.9
	1952	430	317	0.7	*1.5	1.1
STATE	1950	3778	29,828	7.9	2.9	22.9
	1951	3887	31,340	8.1	2.9	23.5
	1952	3910	36,314	9.3	2.7	25.1

*Data incomplete, Sex ratio is estimated to be 1.5 hens per cock from information available.

groves and other available cover. Sex ratios are listed in Table 1 with the results of the crowing count.

An index of the spring hen population can be determined by multiplying the average number of calls per stop by the hens in the observed ratio obtained from the winter surveys. Thus by adding the hens to the crowing cocks, the spring pheasant population can be determined.

The spring pheasant cock crowing count shows the primary pheasant range to be located in northwest and north central Iowa. This is also revealed by the Fall Roadside Census (Kozicky, 1952, et al) and other data. Counts from these two districts are more than double the average for the State and have increased slightly during the three-year period of the census. Results from central Iowa have remained nearly the same. West Central has indicated a gradual increase, while the East Central and Northeast areas have shown a decrease over the survey period. Even though most of southern Iowa has a relatively low pheasant population, results of the spring survey have been adequate from this part of the State to discern population trends. Southwest Iowa has shown a large increase the last three years, although the total count remains below average for the entire State. The South Central area has also registered a gradual increase. Southeast Iowa shows the lowest count of all districts and has been low since the conception of the survey. Table 2 lists the indices of spring pheasant populations in Iowa for 1950 through 1952.

INDEX OF FALL POPULATION

Early each year administrators are interested in the expected fall population of pheasants to aid them in setting season and bag limits. This information must be available at an early date. The results of the Spring survey combined with reproduction studies enable biologists to forecast the fall population trends. These data are later substantiated by the Fall Roadside Census, which is usually taken just prior to the hunting season.

Data representing reproductive success is obtained each summer from the Conservation Officers sight record. Officers record all

Table 2

Year	Calls per Two Minute Stops	Index of Spring Hen Population	Index of Total Spring Population
1950	7.9	22.9	30.8
1951	8.1	23.5	31.6
1952	9.3	25.1	34.4

Table 3

Year	Reproductive Success Young per Hen	Index of Spring Hen Population	Total Number of Young Produced
1950	4.8	22.9	109.9
1951	3.9	23.5	92.6
1952	4.3	25.1	107.9

hens and chicks seen during a two week period that begins twelve weeks after the peak of maximum crowing is reached. The ratio of young seen per hen is used as the index to reproductive success. Results are listed in Table 3 with the index of spring hens. The total number of young produced is the product of the two indices.

Fall population estimates would include the spring population of cocks and hens plus the number of young produced.

Table 4 lists the fall population trends as determined by this method. Results of the two fall population counts are shown for comparison. Results of all three techniques present a similar trend in the state-wide fall pheasant population.

Table 4

Year	Total Spring Counts plus Young	Officers Fall Roadside Count Birds per Mile	Mail Carriers Fall Count Birds per 100 Miles
1950	140.7	0.72	3.7
1951	124.2	0.61	3.4
1952	142.3	0.78	3.5

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BIOLOGY SECTION

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