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## **The Value of Data From Four Iowa Quail Seasons**

By M. E. STÉMPÉL

In the Iowa Conservation Laws, Section 109.39 titled "Biological Balance Maintained" is this sentence: "The seasons, bag limits, possession limits, and territorial limitations set forth herein shall prevail for each and every species of wildlife to which they pertain as long as the biological balance for each species or kind remain such as to assure the maintenance of an adequate supply of such species."

Outstanding among sports activities in southern Iowa is quail hunting. In order to maintain this sport at the highest possible level it is necessary to make regulations. As a sound basis for regulating, the commission must be furnished by the biology section, with continuous accurate information.

The quail territory lies southeast of a line running north east from Shenandoah through Cedar Rapids. Officers in the counties in the quail territory furnish information on general quail conditions. Additional checks are made by the biologist. To be considered are brood size, and whether or not the population is distributed in the same density as in other years. Findings for the year are compiled and should data indicate favorable comparison with the previous season a similar season is recommended by the Biology Section.

The season serves the same purpose as the sale of surplus farm livestock: Numbers are reduced so that food and cover will fill the needs of the remaining birds.

Known factors to be considered in setting seasons are, the number of hunters, number of birds, amount of cover, and the extent of the coming harvest. An unknown factor is the weather. There is however, one basis for estimating the weather ahead, and that is the weather behavior pattern for past years.

One year round census employed is a voluntary mail carrier count of quail along the roads. These censuses are made during the winter, spring, summer, and fall. Officer reports on the number of birds are compared to former years' reports, and a count is made of whistling cock birds in July. An early fall count is made of coveys flushed. This winter a spot check has been made to determine survival. This will give a year round picture.

Census figures are used in this manner: in 1948 the pre-season census was taken and recorded. After the 1948 hunting season, the

figures on hunting success were compared to pre-season census figures. That gave us a figure that could be applied, on a percentage basis, to the pre-season count in 1949. It was then possible to estimate the probable success of the average hunter, and thence to recommend a suitable season, shooting hours, and bag limit.

The 1949 season was set at 45 days for the 38 most heavily populated counties, and 15 days for 13 counties that are on the border of the quail range.

During the season the Conservation Officers checked, at random, a pre determined number of quail hunters. The officer carries cards on which he enters the following information: date, county, number of hunters, whether hunters are local, or have driven more than 25 miles to hunt; number of hours the party hunted, whether a dog was used, number of coveys flushed and number of quail bagged.

Summing up the information gathered by officers during the 1949 quail season in Iowa we get the following: the average party size was 2.5 hunters; the central agricultural district party size was 2.3, the east central district party size was 2.4, the south west district 2.4, the south central 2.9, the south east district 2.6. The largest parties hunted in the south central district, the smallest parties hunted in the central district.

Hunting hours per man in the central district 2.79, east central 3.21, south west 3.93, south central district 3.94, the south east district 3.61. Most hunting hours per man per trip were spent in the south west. Least hours were spent in the central district.

Hunter hours per bird were: central district 4.46, east central 2.56, south west 2.55, south central 2.62, and in the south east 1.44. In the central district, the most hours were recorded per bird bagged. In the south east least time was consumed per bird bagged. It took three times as long to get each bird in the central district as it took in the south east district. In Polk county, in the central district, 44 quail were bagged in 88 hours by 74 hunters, while in Davis county in the south east district, 501 quail were bagged by 150 hunters in 252 hours.

Figures are compiled for all the counties in the quail range and compared to the census figures obtained before the season.

In 1949 in Polk county, more quail were flushed in the pre-season fall count than in 1948 during the pre-season count. In 1949 in Davis county, less coveys were flushed than in 1948 during the pre-season count. The work was done at about the same time, and the same method was used in both counties. Davis county has the heaviest bird population, and three times as many coveys were

flushed in Davis county during the September census. In this particular case it did also happen that the average hunter take was three times that of Polk county. Figures cannot always be compared thus; among the reasons, the probability that coveys are flushed more often in the county having the least number of birds. Birds may become wild more quickly, and disappear after once being flushed.

In 1949, 539 quail contact cards were turned in by officers and other personnel. 1424 hunters were contacted: 75% used dogs. Over a four year period, 1946 through 1949, the greatest use of dogs was recorded in the hunting season of 1947 when 78% hunters contacted were using dogs.

Pre-season census data indicated, in 1949, after comparison with data already on hand, that there was an approximate decrease of 20 per cent in the quail population. The recommendation was therefore that the bag limit be reduced from 8 to six birds with a possession limit of 6 birds. 1949 hunting season data already compiled indicates that hunter success during the 1949 season was down 18% from 1948. Heaviest hunted areas in order of the number of parties interviewed were: Davis, Appanoose, Lee, Polk, Monroe, Wapello, Keokuk; while Tama, Winneshiek, and Clayton counties were among the lightly hunted.

**Table 1**

Hunter Activity by Districts 1946 to 1949

Year	Central District				East Central District			
	1946	1947	1948	1949	1946	1947	1948	1949
Party Size		2.73	2.48	2.3		2.55	2.61	2.4
Man Hrs. Hunted		2.71	1.91	2.79		3.83	1.69	3.21
Party Hrs. p/Covey		2.54	1.05	3.02		1.74	1.32	2.84
Hunter Hrs. p/Bird	.97	2.03	2.27	4.46	1.57	1.32	.85	2.56
Year	South W. District				South Central District			
	1946	1947	1948	1949	1946	1947	1948	1949
Party Size		2.40	2.67	2.4		3.07	3.63	2.9
Man Hrs. Hunted		3.31	2.88	3.93		4.00	4.60	3.84
Party Hrs. p/Covey		1.23	1.32	2.36		1.87	2.41	2.96
Hunter Hrs. p/Bird	.61	1.10	1.40	2.55	1.02	1.74	2.08	2.62
Year	South East District							
	1946	1947	1948	1949				
Party Size		2.58	3.22	2.6				
Man Hrs. Hunted		3.67	3.48	3.61				
Party Hrs. p/Covey		1.32	2.74	1.51				
Hunter Hrs. p/Bird	1.25	1.11	1.56	1.44				

In general, the south and east tiers of counties are not as heavily farmed as the northern tiers represented by Polk county. Because of the type of land, the farm practices in the southern counties are more nearly stabilized. Because of low land value, the brush and timber areas are not frequently disturbed by the plow.

To supplement other methods of securing data, quail wings were collected in 1947, 1948 and in 1949. By checking wings for coloration on upper coverts (Leopold 1939) and the outline of the first, and second primaries (Stoddard 1936) the young-old ratio can be determined. The ratio of young has increased each season for which there is a record. Apparently there is a higher percentage of young in counties where populations are low. If this is true it corresponds to the theory that larger coveys are reared when populations of breeding birds are low.

In the year 1946, the average bag per trip was 3.50 birds per hunter interviewed. In 1947 the take dropped to 2.66 birds per hunter. In 1948 the take was 2.16 birds per hunter per trip, and in 1949 the average hunter bagged only 1.77 birds each trip.

Over the period of years covered there has been a steady increase in the number of hunters, and a steady decrease in the amount of land useable by wildlife. In some instances it is possible that a certain amount of the cutting of brush, and the change in farm crop management will not greatly affect bird life since quail use only the edge of the brushy areas.

Reducing the size of the areas of cover, however, will serve to cause birds to range more widely, and make them harder to find so that the average party will find less birds in a day because they can cover only a limited amount of ground in a given time.

In the central district in 1946, the average amount of time spent per bird bagged was .97 hours; in 1949 the time spent per bird bagged was 4.46 hours. In 1946 in the south east district 1.25 hours were required to bag one bird; in 1949 in the south east 1.44 hours were spent afield per bird bagged. Decline in hunter success does not in every case mean that there are less birds. There may be more

**Table 2**

Data From Officer Contact Cards 1946 to 1949

	Number of Hunters	Hours	Bag	Number of Coveys
1946	703	2610	2514	
1947	1544	6032	4121	1262
1948	1887	6838	4075	1358
1949	1428	5054	2538	895

inexperienced hunters, and more intensive hunting makes the birds wilder, and the early fall tendency to scatter when disturbed may not persist. If the nesting success has been average there are surplus birds. It is sound practice to shoot coveys down low enough that after the calculated winter kill there will remain enough breeding birds to replace the early fall numbers. Allowance must also be made in calculating what breeding birds are needed, for a per cent loss by predation and other fairly constant factors that affect populations.

Methods used in determining populations are adapted to the information channels available to the commission. The amount and timeliness of the information determine its value. The censuses, and checks that are now in use have, to date, indicated both the trend of the bird population, and the degree of hunter success that could be expected during each succeeding season.

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446 SOUTH SCHUYLER  
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