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## Bobwhite Quail, Winter Weather and Agriculture

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*Iowa Conservation Commission*

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Eight nests were found that had been deserted by the hen. Twenty-three nests were successful, 24 nests were destroyed by predators, and 41 nests were destroyed by farm machinery. *Cause of Loss of Nesting Hens*

Twenty-eight per cent of the 52 hens nesting in hayfields were killed or injured by mowers. Two hens nesting in oatfields were killed by predators and two were injured when they were hit by windrowers. Two hens were injured by a farmer when he hit them while mowing the weeds in an idle patch of ground. Twenty out of 96 nesting hens are known to have been either killed or injured while on their nests.

#### ACKNOWLEDGMENTS

Special thanks are extended Dr. Arnold O. Haugen, Leader of the Iowa Cooperative Wildlife Research Unit, in the study and manuscript preparation. Thanks are also due Dr. David Huntsberger for help in the statistical analysis, and to Dr. Eugene D. Klonglan for assistance in field activities. The help of Roger Bolstad and other graduate students, and farmers on the area is sincerely appreciated.

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## Bobwhite Quail, Winter Weather and Agriculture

M. E. STEMPEL<sup>1</sup>

*Abstract.* Bobwhite quail are still found in most of their historic range which extends north into Minnesota. The best Iowa populations are in the three southern tiers of Iowa counties. Their peak abundance occurred before 1900. Long cold winters and deep snows usually decrease quail numbers. However, in the best brushy cover near grain fields, they have persisted in good numbers even though the bitter cold winters of 1912, 1936 and 1960. The 1960 winter losses were estimated at about 70 per cent in scanty cover, but as low as 10 percent in high quality cover.

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Bobwhite quail (*Colinus virginianus*) populations vary from year to year and this is partially due to the character of the bird. Variation is also due to environment. For example, adverse winter weather is often followed by low populations, and this is most noticeable where agricultural practices remove brushy cover.

Male bobwhites are known for their spring "Bobwhite" calls. Popularity with hunters is due to the habit of staying in easily identified fall cover and "holding" for pointing dogs. Although they continue to live in most of their historic range, it is apparent that Iowa quail occurred in greatest numbers before 1900 (Errington, 1933). While affected by many conditions, they apparently suffer most because of insufficient brushy cover, deep snow and long, cold winters.

This report contains pertinent information for the period since 1900. It concerns quail, significant winter weather patterns and land use. Background information is presented for Iowa as a whole, some concerns the main southern Iowa quail territory and adjoining ranges in Missouri. The more detailed narration is on events in Wapello County as a representative sample of Iowa quail range.

#### METHODS

Data are from conservation commission reports, Iowa weather records, and newspapers. Soils studies and Iowa history were consulted. The soil conservation service office in Ottumwa furnished soil and crop reports. The Wapello County assessor contributed some data and other information is from my field notes. Details of early quail shooting were furnished by Benny Newman of Agency and other acquaintances.

The sequence of the material is: 1. Iowa quail before and after 1900: 2. Weather: 3. Agriculture: 4. 10-year summaries which demonstrate relationship between bobwhite quail, winter weather and agriculture. Agricultural patterns and urban expansion patterns are the "cement" that hold together the various elements which are named above.

#### RESULTS

Before the year 1900, quail were plentiful in favorable seasons. One resident near Lineville, Iowa, reported he bought a Winchester pump gun (after 1883) and in one day he shot over 50 quail. In similar country in Missouri, as late as 1883, McKinley (1960) reported that two men took 51 quail along with other game in a 1-day hunt.

Ideal quail cover such as that which existed at the time of the above abundance of birds, gave way to grain and pasture land which were needed to sustain the constantly increasing human

population which was 2,231,853 in 1900; 2,538,268 in 1940; 2,621,073 in 1950; 2,757,537 in 1960 (World Almanac, 1961). When brush was replaced with cropland this resulted in severe quail losses, especially during the rigorous winters of 1912, 1936 and 1960.

1912. The Ottumwa Courier newspaper of January 12, 1912 gave the temperature as  $-27^{\circ}$  F, one of the coldest days ever recorded in that area. There were 15 days of below zero temperatures with deep snow. Schools closed as deep drifts formed and blocked roads and railways. On February 17 additional snow accumulated.

1936. January 18 to February 22, below zero temperatures occurred most of the time (Greene, 1936). The snow was powder-dry and drifts were very deep.

1959-1960. There were 74 days of continuous snow cover with 12 days of below zero temperatures (Des Moines Register, 1962). In January (Chronological Data, 1960) excessive rain fell with Ottumwa receiving 1.39 inches in 1 day. This was followed by ice glazing and drifting snow. February brought 16 inches of snow to Albia; the worst storm in years hit southeastern Iowa with a snowfall that was a 70-year record. March was wintry and similar to March 1912 when in southern Iowa it was very cold with 12 to 22 inches of snow. Albia had 68.6 inches of snow for the 1959-1960 winter and this was the heaviest recorded. Other winters since 1900 can be classed as moderate or only locally severe.

Winter weather in 1960 was most destructive to quail because since 1900, great expanses of protective quail cover had been replaced by cropland which amounted to 22,390,000 Acres by 1919. It decreased to 21,187,000 Acres in 1937 (land retirement). In 1949 the cropland area was 22,906,000 Acres. Increase was due to clearing and to plowing of land that was once under the retirement program. Grassland and grazing land totalled 7,525,000 Acres in 1920; 9,007,000 in 1950 (due to land retirement from cultivation) and 6,875,000 Acres in 1950 (land returned to cultivation).

### *Conditions in Wapello County*

Local effects of winter and agriculture can best be illustrated by selecting examples from Wapello County which is 95 miles southeast of Des Moines. It contains 428 square miles. While the Iowa quail range is in country designated as loess-type soil (Brown, 1936), some areas consist of Clinton, Lindley or Genesee loam soils. Average rainfall for Wapello County is 29 inches, mean annual temperature  $49^{\circ}$  F. The Des Moines River divides

it into a rolling northeastern half and a rough southwestern half. Until 1916, "patch" farming predominated.

In 1962, 11 per cent of the people in the county lived in rural areas. According to a report in the Des Moines Register of February 4, 1962, neighboring counties Monroe and Appanoose lost 2 of each 5 families in the past 20 years. However, the growing total population was centered in larger towns of Wapello County. By 1959, 51 per cent of the land was under cultivation. Average farm size was 147 Acres with many larger farm units.

*Status of Quail During Each Decade, 1900-1960*

Information to show periodic effects of settlement, winter weather and agriculture on quail follows.

1900 to 1909. The 1936 report of the conservation commission stated that quail existed in fair numbers for 40 years. Through this period the human population increased. Winter weather was mostly favorable. Agriculture expanded but only the tilled fields were cleared because implements were horse-drawn. Undisturbed brushland near grainland was deal for quail. Newman (1962) in a personal communication said the quail shooting was popular but that it was second to "chicken" (prairie chicken) shooting. "Pot" hunting was common. There was some market hunting. It was estimated that in Wapello County there were from 50 to 100 men who frequently hunted quail. Two good gunners with trained quail dogs could take 50 to 100 quail per day.

1910 to 1919. Early in this period quail were doing well. Human population was increasing and 42 per cent of the Wapello County population was rural. The 1912 winter was destructive (Des Moines Register 1960: Ottumwa Courier 1912) and frozen quail were found (Newman and Watts, 1962). Farms at that time averaged 115.2 Acres. In Wapello County only 25 per cent of the conuty was in crops (Soils, 1917). In choice portions of Wapello County, Newman recalled, hunting was excellent and when conditons were best, two men with dogs might flush 30 or more coveys per day (some coveys might be flushed more than once). After the harsh 1912 winter there was sentiment to close the quail season.

In 1916 the quail season was closed (Bennett and Hendrickson, 1938). However, illegal shooting persisted, and rabbit hunters saw many quail (Newman and Watts, 1962). While it was believed by some that quail were scarce in portions of the Iowa range, McKinley (1960) reported that Missouri quail were **at a peak**.

1920 to 1929. Throughout the Iowa range quail suffered minor fluctuations. The season was not reopened. Clean farming

further reduced cover. McKinley stated that in Missouri, during the winter of 1928, some believed that the weather was severe enough that quail should be fed artificially. Apparently the weather was not destructive for later it was recorded that in 1929 Missouri had the best bobwhite season in 15 years.

1930 to 1939. Quail were numerous in favorable environment. Because of the depression, land clearing was at a minimum. "Clean farming" of the previous period had left little cover in high-grade land. In marginal areas some brush remained and here the birds did well. In 1933 a trial season was granted in 14 managed areas. Some were in Wapello County. Seasons were not satisfactory because of management "red tape", and regulations were relaxed. In spite of the losses of quail which were due to the severe 1936 winter, the 1938 shooting season in Iowa was one of the best ever recorded. This was the period of land retirement from cultivation (depression) and it was possible to flush 10 to 15 coveys per day in prime cover. Limit kills of 8 were common.

1940 to 1949. Quail populations remained fair to good. Urban areas expanded. Winter weather was generally favorable. Land retirement was discontinued; farming became more intensive and (before the mechanized type of operation) brushy cover disappeared at an alarming rate. A legal season for taking quail was opened in 27 counties in 1940 and shooting was fair to good where cover was adequate. Hunters could flush 2 to 6 coveys per day. The best hunting seasons were 1944 and 1947.

1950 to 1959. Until 1959 there was a general increase in the number of quail throughout the Iowa range. This was especially true of the southern one-third of the state. Some decrease was noted in 1959. The human population increased. Winters were mostly favorable. Brush clearing progressed at an accelerated pace. Since 1947 government subsidized pasture clearing has been under way, and in 1959 in Wapello County 373 Acres of brush was cleared (ASC Office, 1962). In Appanoose County, between 1947 and 1962, 15,000 Acres of brush was removed. There was some natural replacement. By this time, based on my survey in a public school, it was calculated there were 1000 to 1500 Wapello County hunters who sought quail at least once per week during the season. The best hunting years were 1954 and 1958; the poorest in 1953 and 1955 (Stempel, 1960). Experienced quail shooters with dogs usually could flush 2 to 6 coveys per day.

1960. Iowa quail numbers were high at the time of the February-March winter quail counts throughout the quail range. In Wapello County the birds were plentiful until spring. The severe

late winter weather, however, concentrated quail in limited cover according to observations of conservation officers and biologists. Unharvested corn was plentiful, but the late cold and wet weather was harmful. The summer calling cock quail counts revealed losses in good cover (consisting of trees, brush and cut-banks) were light, while loss as high as 70 per cent occurred in poor cover (weeds and scanty brush).

Power brush cutters, chain saws and bull-dozers made rapid inroads on brush patches and hedgerows. The hunting season was reduced to 30 days. It had been about 45 days in previous years. Hunters reported a much poorer season than in 1959, with the most experienced finding 1.1 coveys per party with an occasional man flushing 3 to 4 coveys. Shooting pressure was down 20 per cent from 1959 on a sample area of seven farms in Wapello County, and it was low on a random check area in Lucas and Wayne counties. In Wapello County an estimated 200 men hunted quail several times each during the open season.

1961. A fairly good breeding population of quail persisted in substantial coverts. There was a fall increase of 30 per cent over 1960. Best coverts in Wapello County had counts of 2 to 5 calling cocks per 640 Acres. This compares to 4 to 8 in high population years. While the total numbers of people did not increase greatly, there continued a constant inroad on brushland for dwellings, roads, businesses and other improvements. Winter weather was favorable, but it was followed by a belated cold spring which delayed nesting. Agricultural practices cut into the remaining brushlands with the government sharing the cost. Extensive pasturing depleted dense cover. However, much of the bean and the corn land was not harvested in the southern Iowa quail territory. Hunting was legal for 42 days in 69 counties. A number of hunters contacted indicated they considered 1961 as good or better than 1960. The number of hunters increased slightly over 1960 on a sample area in Wapello County. Gunners flushed an average of 1.8 coveys per party (opposed to 1.1 in 1960).

#### *Other Factors*

It is evident that harsh winters with considerable snow deplete the quail population (Kozicky and Hendrickson, 1952). Losses are highest in poor cover. However, moderate winters, warm summer and spring weather and expansive temporary cover (to bolster lost areas of brush) encourage production (Stempel, 1960).

In coverts which include ditches and cut-banks along with tall young trees, mixed with low native brush, and grass with weeds adjoining grain fields, the birds winter well. An indication of how quail have perished from lack of cover since 1900 is in

the report of Benny Newman of Agency, Iowa. He reported that in prime cover in the Des Moines River bottom, he and a friend, between 1900 and 1910, flushed 10 to 30 coveys of quail per day. Some may have been flushed more than once. Cover was brush, trees, weeds and grass. Now many of these sections of land have only corn. A few sections have a minimum of cover and these support only 1 to 2 fall or winter quail coveys per 640-acre section.

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## Semi-Controlled Hunting of Waterfowl at Lake Odessa, Louisa County, Iowa—1960 and 1961

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*Abstract.* In 1960 and in 1961 two "controlled" shooting areas with a total of 25 "blind" sites were established at Lake Odessa, Wapello, Iowa. The remaining "uncontrolled" portion of the public hunting area was open without special restrictions. Checking stations were operated at each of the two main access points. A total of 6,014 hunters harvested 6,499 waterfowl in 33,968 hours, averaging one bird for each 5.2 hours of hunting in 1960. In 1961 a total of 3,391 hunters killed 3,391 waterfowl in 17,618 hours, averaging one bird for each 5.2 hours of hunting. Hunter success, expressed as the number of ducks per hunter per day, was 1.1 in 1960 and 1.0 in 1961; however, the aggregate harvest dropped 48 per cent in 1961. Season length was reduced 40 per cent and there was a 44 per cent drop in the number of hunters. The reduction in daily bag from 3 to 2 ducks had little if any effect upon the total harvest, and the reduction in season length was almost entirely responsible for the 43

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