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A Late Spring and a Late Quail Hatch

By M. E. STEMPEL

The number of quail that hatch, and live until the hunting season is determined by several factors. Weather is the most widespread of these factors. (Stoddard, 1936). A study was made in 1950 and 1951 to learn how variations in the weather correspond to variations in the Iowa quail populations.

Data for this study was obtained from quail wings collected in southern Iowa during the open quail season. Samples came from the following counties; Appanoose, Davis, Decatur, Jasper, Lucas, Poweshiek, Union, Wapello, Wayne. Wings making up the sample were from the birds taken by average hunters encountered in the field. Conservation Officers, and other department personnel cooperated in collecting wings in envelopes, and recording place, and date of kill.

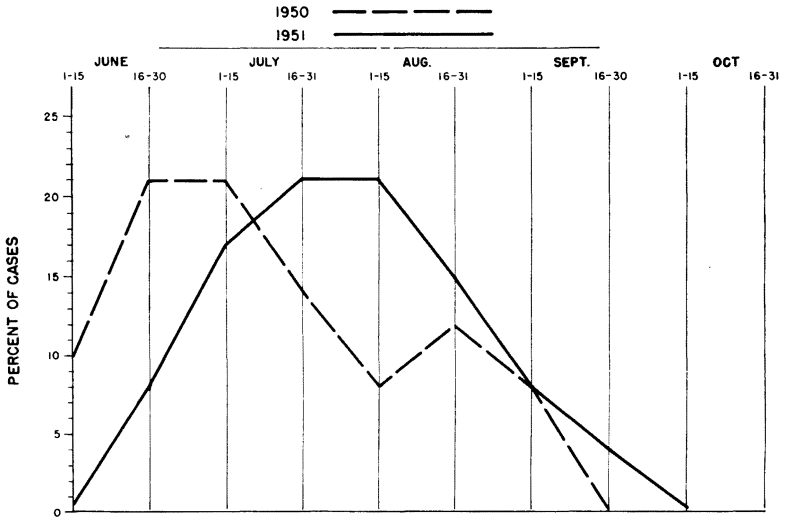
Wings used in the study were first divided into old and young groups. Wings are classified by making an examination of the covert feathers concealing the base of the long outer flight feathers. In young quail covert feathers are tipped with buff. Covert feather tips of the adult quail are of the same uniform grey as the other part of the feather.

Wings of young quail may be further identified by the pointed ends of the outer two primary flight feathers. These two feathers are known as the number nine, and number ten primaries. In adult quail these feathers are rounded at the tip. Thus by inspecting the tip of the number nine, and the number ten primary, and by the color of the tips of the greater primary coverts it is possible to determine whether the quail is one that has hatched this year. (Petrides and Nestler, 1943).

Number of days age of young quail is learned by measuring one or more of the growing primary wing feathers. The primary nearest the body is number one feather. Number ten feather grows from the outer end of the wing. In young quail the replacement of the flight feathers begins at 28 days of age. Beginning with primary number one, the first eight of the primaries are successively moulted, and replaced during the first five months of the quail's life. Primaries nine, and ten are not moulted and replaced the first year. In the young bird, the original number nine, and ten feathers are fully grown in 65 days. (Petrides and Nestler, 1943). After five

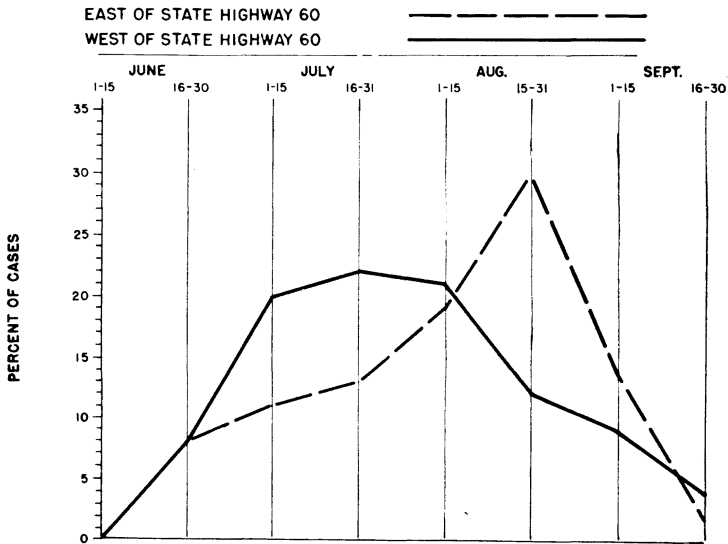
HATCH DATES OF IOWA QUAIL 1950-1951

FIGURE NO. 1



IOWA QUAIL HATCH DATES

FIGURE NO. 2



DATA FROM WINGS OVER 14 DAYS OF AGE IS NOT IN THE DATA USED.
 WEST OF HIGHWAY NO. 60, 33% OF YOUNG QUAIL WERE OVER 140 DAYS OLD.
 EAST OF HIGHWAY NO. 60, 35% OF YOUNG QUAIL WERE OVER 140 DAYS OLD.

months feather growth is complete, and this plumage is retained until the following summer.

Replacement primaries grow at the fairly uniform rate of about 3 mm per day. By measuring a primary feather that is growing, the age of a young quail can be established, and the age indicated will be within 14 days of the true age of the quail. For example: from the sample collected on November 7 a wing is selected. On examination we find the number nine, and ten primaries are pointed. Also, the covert feathers are tipped with light tan color. The wing is thus identified as that of a young quail. Number three primary measures 82mm in length. By referring to our chart of quail feather growth we learn that the bird is 61 days of age, and it was hatched on September 8.

1950 WEATHER AND QUAIL HATCH

Spring 1950 was about two weeks later than normal. (Iowa Climatological Data, 1950). However, quail mating activity did become apparent early in April. Spring "Bobwhite" calls by male quail is one of the first reliable signs of mating activity. During the first week in April 1950, quail calling became general. April 7 the temperature rose to 69° at both Centerville, and Bloomfield. (Iowa Climatological Data, 1950). The weather bureau regarded the crop growing season as being about two weeks later than normal. June, however, is the critical quail hatching month, and in 1950, the early part of the summer did have many warm, dry days. Precipitation was about normal.

During the 1950 open season in the fall, 110 quail wings were collected, and a record was made of the place, and the date of collection. Of the total, 82 were wings of young quail, 16 were adult, the balance were damaged and could not be processed.

Data obtained by measuring growing primary feathers on wings of the young birds showed that quail were hatched through June, and until the last of September. The peak of hatch occurred between June 15, and July 15 when 44% of the birds were hatched. (Fig. No. 1) Eight per cent of the hatching took place after this peak period, and between August 1, and August 15. But there was a later gain in the hatch because 12% of the sample consisted of quail that hatched during the last two weeks of August. It may have been the late hatch of 12% of quail that made 1950 a year when quail coveys were comparatively easy to locate in most parts of the quail range.

Hatch date of 37% of the quail young could not be determined as this number of birds were over 140 days old, and age of birds of

this class cannot be determined because feathers have reached maximum growth.

1951 WEATHER AND QUAIL HATCHING

Iowa Climatological Data records show that in 1951 the spring was later than in 1950. Late winter breakup delayed mating of quail. Early April did not witness the extensive "Bob-white" calling of the male quail. Calling of the male quail was not generally heard, morning and evening until the third week in April when a temperature of 83° was reached at Bloomfield, and a temperature of 82° was reached at Centerville. Sixty three degrees was the highest spring temperature prior to that date.

In June, the month when quail hatching usually reaches its peak, Bloomfield recorded 8.92 inches of rain, Centerville had only 7 inches of rain.

During the following hunting season, in 1951, the cooperators were asked to send in one undamaged wing from each quail collected. If the right wing was damaged only the left wing was sent in. A total of 189 wings were collected, and date, and place of kill was recorded. Forty-three of the wings were from adult birds, 146 were from young quail.

The 1951 quail hatching period indicated by the wing samples extended from the first week in June to the second week in October. The peak of the hatching took place over a thirty day period extending from July 15 to August 15. (Fig. No. 1) 44% of the wings were from quail hatched during that period. Only 12% of the juvenile wings collected in 1951 were from quail more than 140 days old. This 12% is not represented on the graph.

HATCHING WITHIN THE SAMPLE AREA, 1951

Data from counties lying to the east of State Highway number 60 running through Centerville, and Albia, shows a peak of hatching during the last two weeks of August. Counties farther west show a good hatch in the last two weeks of July. It is also indicated that the productive period in the west extended over a longer period of time. This is illustrated in Figure number 2.

To the east, quail taken by hunters in 1951, were 80% young birds. West of the number 60 road, the count of young ran as high as 90% young and 10% adult birds. The figure of 90% is unusually high. The average for Iowa over a period of years is 82% young quail in the hunter's bag.

ADULT QUAIL TAKEN BY THE HUNTER

Thompson and Kabat, in 1950 stated that the hatch period of quail appears to determine the time that the old quail will moult. Moults

in the adult quail follows the activity of the breeding, and the nesting season. Adults moult, and regrow all ten of the primary feathers. The stage of moult in the old quail should correspond to the stage of moult in the young quail. Late moult, and replacement of feathers should follow the late hatching season.

Eleven percent of adult quail taken in December 1950 had not yet replaced the number nine, and ten primary flight feathers. 37% of the young quail killed in the 1950 quail hunting season were more than 140 days old.

37% of the adults taken in December 1951 had not completed regrowth of the number nine, and ten primaries. Twelve percent of the young quail taken in 1951 were more than 140 days of age.

In December 1950 a very small percent of adults had immature plumage. A proportionately high percent of young birds had reached the 140 day old class. The early moult in the adult corresponded to an early hatch during the summer.

CONCLUSIONS

Spring 1950 was about two weeks later than normal. Temperatures in the quail range were cool, but there were many warm, dry days in May and June. 44% of quail hatched over a 30 day period from June 15 to July 15.

Spring 1951 was about three weeks later than normal. Rains were frequent and heavy. 44% of the young quail hatched over a 30 day period extending from July 15 to August 15.

Spring season 1951 was later than spring 1950. The average young quail in the sample taken in the fall, 1951 was younger than the average young quail taken in the sample in the fall of 1950.

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