Kill Analysis for the Lesser Prairie Chicken in New Mexico, 1949
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NOTES ON THE FOOD HABITS OF PEN-RAISED BOB-WHITE QUAIL

At six o'clock on the morning of March 3, 1942, the writer banded and released four pen-raised Bob-White Quail, (*Colinus v. virginianus*), near Science Hill, Pulaski County, Kentucky. These birds had no food of any sort on March 2, and prior to their release had not set foot upon the ground. Between five and five-thirty p.m., after some 11 hours of freedom, the birds were collected in order to determine what they had eaten. All were collected within fifty yards of the point of release.

The following tabulation shows the result of subsequent stomach analyses by the Fish and Wildlife Service:

Major Food Items

Food	*Per Cent*
Unidentified leaves	36.25
Smilax sp.	31.25
Rhus glabra	29.50
Rhus sp.	1.50
Chilopoda	1.50

Minor Food Items

Food	*Occurrence (No. of stomachs)*
Cercis canadensis	2
Chrysomelidae	1
Cornus florida	1
Morus sp.	1
Unidentified grassy material	1

Another bit of interesting information came to light near Anna, Warren County, Kentucky. In this instance the remains of a banded, pen-raised quail were found on May 29, 1941. The bird had been released on April 17, 1941, and had apparently been killed by a predator some three or four days before the remains were found. Examination revealed the crop to be intact, and analysis of its contents by the Fish and Wildlife Service showed the following materials:

	Food Item	*cc.*	*%*
3	*Cornus florida*	0.2	4
15	Coleoptera, Chrysomelidae: *Zygogramma sututalis*	0.5	10
83	Coleoptera, Curculionidae: *Tanymecus confertus*	2.8	59
14	Lepidoptera, Larvae	1.0	21
10	Hymenoptera, Formicidae: *Formica fusca* var. *subserica*	0.1	2
85	Hymenoptera, Formicidae: *Lasius niger*	0.2	4

In addition the bird had taken an exceptionally wide variety of food as indicated by the fact that one plant and 27 species of animals were identified, occurring only in trace amounts. These included *Rhus* as the only plant, and the following animals: 1 Orthopteran; 1 Hemipteran; 15 species of Coleoptera representing the families Carabidae, Elateridae, Scarabeidae, Chrysomelidae, Cantharidae, and Curculionidae; 3 Dipterans of the family Bibionidae; 5 Hymenopterans of the family Formicidae; 1 Araneida; and 1 Chilopoda.—ROGER W. BARBOUR, *Oglebay Institute, Wheeling, West Va. Oct. 11, 1949.*

KILL ANALYSIS FOR THE LESSER PRAIRIE CHICKEN IN NEW MEXICO, 1949

INTRODUCTION

A short hunting season of the lesser prairie chicken (*Tympanuchus pallidicinctus* Ridgway) was held in an area of some 1,800 sections (sq. mi.) of land in southeastern New Mexico, beginning at noon on the 26th and closing at 4:30 p.m. on the 28th of November, 1949. This was the second time that a hunting season of these birds had been allowed since 1934. In 1948 a very good season was held at about the same time and under the same restrictions and a large number of birds taken. In the early 1930's a combination of drought and resultant overgrazing of the prairie chicken range had driven the birds in New Mexico to the brink of extermination.

The birds began to increase, however, following a period of favorable breeding weather and widespread habitat improvement under the Pittman-Robertson Federal Aid program. More adequate law enforcement, effective predator control, and landholder cooperation were all useful in encouraging the increase to an extent that a restricted hunt was permitted in 1948. While the kill was quite heavy that season an extensive survey in the fall of 1949 of the prairie chicken range showed an adequate number again to justify a second season.

Plans were made by the New Mexico Department of Game and Fish to get as much information on the lesser prairie chicken as possible by a careful check of the hunter's bag. The main effort was concentrated on aging, sexing and weighing each bird checked.

METHODS

By means of field checks during the day and check stations set up in the late afternoon at the two most important crossroads leading out of the area, it was possible to examine 962 birds, of which number 923 were sexed, 903 aged, and 700 were weighed. Field checks during the day did not include weighing in most cases since it seriously interfered with the hunters' pursuit of the birds. Most weight, sex and age records were taken at the check stations just before the close of the day's hunting, and from then on until all hunters had checked through the road block. Equipment used at the stations consisted of poultry scales, powerful spotlights and record books. Two technicians were required to operate each station in addition to the law enforcement personnel. The methods used in classifying the birds was a combination of information obtained from Bent (1932), Dwight (1900), and Ammann (1944). Very little information exists on the plumages, and age and sex differences of the lesser prairie chicken. Ammann's work was done on the greater prairie chicken (*Tympanuchus cupido americanus* Reichenbach), but it was found that his method of aging by primary feather wear was just as applicable to the lesser as to the greater prairie chicken. Sexing the birds was quite easy, but age determination was much more difficult in view of the minor differences between adult and immature birds. The difference in tail coloration of males and females, both young and adult birds, is quite evident. The dark brown tail feathers of the male are banded with buff at the tip, while those of the female are light brown and barred in varying degrees with lighter buff throughout the length of the tail feathers. This difference applies to both immature and adult birds. Individual variation was in some cases extreme, and without internal examination, such birds could not be positively aged on a field check. It is believed, however, that most age determinations are correct.

DISCUSSION

The first afternoon of the season produced the best hunting. The favorable weather on the first day probably contributed to the hunter success. High winds and cold interfered seriously with the last two days of the hunt. Based on a spot check of 167 hunters in 47 cars, the average hunter success was 1.96 birds per hunter, an excellent average. The prairie chickens were widely scattered in small bunches over the range lands adjacent to the cultivated fields of sorghum and corn, the principal crops of this dry land farming region.

The range lands which enclose the fields are principally low sand hills with a mixed vegetation of shin-oak (*Quercus havardi*), sand hill bluestem (*Andropogon* spp.), sand sage (*Artemesia* spp.), sunflower (*Helianthus* spp.), mesquite (*Prosopis glandulosa*), wild plum (*Prunus* spp.), yucca (*Yucca glauca*), dropseed (*Sporobolus* spp.), grama grass, mainly black and blue with some sideoats grama (*Bouteloua eriopoda, B. gracilis* and *B. curtipendula*). These plants are interspersed with numerous weeds such as dayflower (*Commelina* spp.), loco (*Astragulus* spp.), milkweed (*Asclepias* spp.), russian thistle (*Salsola pestifer*), and snakeweed (*Gutierrezia sarothrae*). Heavy cattle grazing is usual in this area and range deterioration is often conspicuous.

The prairie chickens of the area habitually feed in the fields during the fall and winter. They come into the fields at sunup and again just before sundown. They usually fly into the feed ground from their daytime resting places in the shinnery covered sand hills bordering the fields. If the distances are short they may walk, but flights of a mile and more are not unusual.

The proportion of young birds bagged compared with the adults taken was somewhat surprising. Of 923 birds checked 491 were immature, 432 adult. It had been expected that a greater proportion of young birds would be taken than was found to be the case. There seemed to be no evidence of any difference in ease of taking young and old birds, or of male and female.

The 491 immature birds included 231 females and 260 males. The 432 adults included 231 females and 201 males. The findings that an equal percentage of young and old females was taken, as compared with the imbalance between immature and adult males, is not readily explainable.

The flocking together of the same age and sex groups of prairie chickens was indicated by frequently finding that the bag of a group of hunters, who had hunted together, was all composed of birds of the same age or sex, more frequently of the same sex than of the same age. From information obtained from local ranchers and farmers and Game Department personnel stationed in the area, the flocking of birds of the same age and sex in the fall is not uncommon.

A total of 700 birds were weighed, but no significant differences were found between the weight of adults (which averaged 1.57 pounds), and immatures (which averaged 1.58 pounds).

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NOTE ON THE BEHAVIOR OF MARSH HAWKS TOWARD LESSER PRAIRIE CHICKENS

On the afternoon of Feb. 8, 1949, the writer, along with J. Stokley Ligon, James L. Cox, Levon Lee and R. E. Lebow, all of the N. M. Dept. of Game and Fish, witnessed the following interesting, and possibly significant, occurrence in the sandhill country of southeastern New Mexico, a few miles east of Milnesand. This is in the heart of the area in which the lesser prairie chicken (*Tympanuchus pallidicinctus*) has within the last few years staged such a remarkable comeback to a condition of abundance from a condition of near-extermination during the severe drought years of the middle 'thirties.

During an attempt to net-trap some of the birds for experimental purposes, we watched a certain location, much frequented by the prairie chickens, for about three hours. Flocks of various sizes were all around.

During almost the whole time that we had the chickens under observation one, and part of the time two, marsh hawks (*Circus hudsonius*) constantly patrolled a surrounding territory of perhaps one section, keeping always out of shotgun range of our parked cars from which we observed the proceedings. These hawks kept flushing flock after flock of the chickens. Each time, the hawk would rapidly follow the flying chickens for some distance, then repeat the procedure with the same or another flock. In this way, between them the two hawks kept the entire prairie chicken population of quite a sizeable area in a state of constant alarm and agitation, much to the annoyance of the would-be trappers.

Toward evening, numbers of the prairie chickens began feeding out into the field in which the trap was set. The marsh hawks now began to concentrate on the field, and drove quite a number of the birds back to cover. Suddenly, one of the hawks darted into a flock just flushing, striking one bird hard