NOTES ON SOME FALL FOODS OF MOURNING DOVES IN SOUTHWESTERN OKLAHOMA

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Crops of 75 Mourning Doves were collected from hunters in Comanche and Tillman counties, Oklahoma, during September 1976 and 1977. Hunting sites were generally on or near cultivated farmlands. Identification of the 17 species of seeds contained in the crops revealed that wheat, millet, sunflower, and sand dropseed grass ranked highest in order of importance volumetrically.

INTRODUCTION

Although the types of foods eaten by Mourning Doves are generally known (1, 2, 3), these vary with locality, season, and availability. Carpenter (4) recorded his findings from the crops of 546 doves taken from June to October 1968 in several northwestern Oklahoma counties, and Morrison and Lewis (5) analyzed 124 dove crops from near Eldorado in Jackson County that were taken between 1 November 1972 and 28 February 1973, but listed only the top 10 food species according to weight. Little additional information on this subject has been published.

The purpose of this study was to identify the principal fall foods of 75 doves shot by hunters at several localities in southwestern Oklahoma. These sampling areas were usually on or near cultivated fields of cotton, winter wheat, or other small grains interspersed with land devoted to livestock and ranching operations, the primary agricultural enterprises in this part of the state (6).

METHODS

Doves were collected opportunistically. Dates and locations of collection were as follows: *Tillman County:* On 1 September 1976, 29 doves were taken 5.5 km east and 11 km north of Tipton in sandsage-grassland habitat; on 24 September 1977, we collected 7 more at the same location; 5 were shot in an intensively cultivated area 5 km west of Grandfield on 10 September 1977; another was collected in similar habitat on 10 September 1977, 1 km west and 7 km south of Grandfield; and we shot 6 more birds 6.5 km north of Tipton in sandy cultivated land near Otter Creek on 13 September 1977. Comanche County: (all 1977): 12 doves were collected on 1 September 11 km west of Elgin in open mixed-grass pastureland, where 8 more were shot on 8 September; we took 7 others 1 km east of Indiahoma, on 5 September in and near a large field of sunflowers.

Seeds from crops were segregated under a dissecting microscope with the aid of forceps and dissecting needles. Identification was made by comparing seeds directly with those in the Cameron University Museum reference collection and by using a seed identification manual (7). A perplexing seed that occurred repeatedly (Carolina leaf flower, *Phyllanthus caroliniensis*) was identified by Dr. David A. Sander of the Oklahoma State University Agronomy Department. We weighed the seeds of each species on a Mettler P-120 balance. For volumetric determinations, we used a displacement method that employed ultra-fine sand of the type used in commercial ash trays (rather than water) in a 10-m*l* graduated cylinder. We found that, while sand may not have worked quite so well as water, it was a great improvement over the lead shot which is often used for volumetric determinations. Frequency of occurrence was also calculated for each species.

RESULTS AND DISCUSSION

Because of our small sample size (75) and the limited number of crops from each of the six sampling sites (36, 5, 1, 6, 20, 7), our data must be interpreted with discretion. Because of the mobility of doves and the heterogeneity of the area sampled, we did not attempt to compare foods according to habitat, but instead lumped our findings. These reflect the fact that most samples were from sandsage-grassland (36) and mixed-grass pastures (20). We feel that our

data give a reasonable indication of the general types of foods preferred (or at least utilizied most heavily because of availability) by resident and migratory Mourning Doves during early fall in much of southwestern Oklahoma.

We identified seeds from a total of 17 species of plants. Wheat (*Triticum aestivum*) ranked first in percentages of weight (41.9%), volume (41.5%), and frequency (60%) (Table 1). This is not surprising since wheat is the principal grain crop in southwestern Oklahoma (6). Much waste grain remains on the ground in late summer and fall after the harvest in May and June. During exceptionally dry years, many fields are not even cut. Foxtail millet (*Setaria italica*), a minor grain crop, ranked second in all these categories, constituting 36.5%, 38.3%, and 42.6% respectively of the totals. Millet ripens in late summer, providing timely food for migratory as well as resident doves. Many seeds, too small in quantity or weight to be significant, were important in their frequency of occurrence. Two such species not listed in Table 1 were bristle grass (*Setaria lutescens*) and ragweed (*Ambrosia* sp.). Pigweed (*Amaranthus* sp.) appeared in over 21% of the crops, but always in trace amounts. Interesting in another respect was bull nettle (*Cnidosculus stimulosus*): only 8 seeds recovered from 2 crops made up 4% of the total weight and 2.3% of the volume. The large size of this seed accounted for its disproportionate representation. Sunflower (*Helianthus* sp.) ranked fourth in percentage volume (3.6%) behind Carolina leaf flower (*Phyllanthus caroliniensis*), which contributed 5.1% of the total volume. Griffing and Davis (8) ranked *P. polygonoides* second in frequency and volume in summer and first in both categories during winter in an uncultivated area of southeastern New Mexico.

TABLE 1. *Foods of 75 Mourning Doves collected in Southwestern Oklahoma September 1, 1976, and September 8-9, 1977.*

Species	Weight (g)	% of Weight	Rank by Weight	Volume (ml)	% of Volume	Frequency	% Frequency	Rank by Frequency
Wheat *Triticum aestivum*	52.8	41.9	1	64.8	41.5	45	60.0	1
Millet *Setaria italica*	46.0	36.5	2	59.7	38.3	32	42.6	2
Sunflower *Helianthus annuus*	5.8	4.6	3	5.7	3.6	18	24.0	3
Sorghum crop *Sorghum* sp.	5.4	4.3	4	3.3	2.1	2	2.6	13
Carolina leaf flower *Phyllanthus caroliniensis*	4.8	4.0	5	7.9	5.1	14	18.6	6
Bull nettle *Cnidosculus stimulosus*	5.0	4.0	6	3.6	2.3	2	2.6	12
Johnson grass *Sorghum halepense*	2.7	2.1	7	3.4	2.2	4	5.3	11
Sand dropseed *Sporobolus cryptandrus*	1.0	0.8	8	4.1	2.6	16	21.3	4
Poppy *Argemone virginianum*	1.0	0.8	9	1.4	0.9	7	9.3	8
Spurge *Euphorbia* sp.	0.7	0.6	10	0.6	0.4	6	8.0	9
Sudan grass *Sorghum sudanese*	0.5	0.4	11	0.4	0.3	1	1.3	15
Butterfly pea *Centrocema virginianum*	0.2	0.2	12	0.2	0.1	2	2.6	14
Snail *Gastropoda*	t*	t	13	0.1	0.1	4	5.3	10
Pigweed *Amaranthus* sp.	t	t	14	t	t	16	21.3	5
Doveweed *Croton* sp.	t	t	15	0.8	0.5	8	10.6	7
Total	125.9 gms.	99.9%		156.0 ml	99.9%			

*t indicates trace; i.e., less than 0.1 ml or less than 0.2 g.

Wheat and millet ranked far above other foods selected by doves in our sample during the early fall. These findings are in general agreement with those of Morrison and Lewis (5), Carpenter (4), and Korschgen (1). In terms of weight, Morrison and Lewis (5) ranked sorghum far above all other foods taken in Jackson County during fall and winter of 1972-73. Wheat ranked only third, behind *Panicum miliacium*, but they stated that "samples taken . . . before 1 November showed a higher proportion of wheat in relation to other ingested foods." Pigweed they ranked fourth and sunflower fifth. These two ranked fourteenth and third respectively in the present study, however. Carpenter (4) found that *Triticum* was the most important food item by volume and frequency of occurrence June-September in 546 doves from northwestern Oklahoma. Wheat represented 55.7% of the total food volume in his studies compared to 41.5% in ours. Korschgen (1) ranked wheat second only to corn among foods of 2,000 Missouri doves collected from April to October. In a study made in south-central New Mexico on uncultivated land (3), no wheat was recorded, millet comprised just 0.4% of the total summer (including September) volume, and sunflower appeared in only trace amounts. However, in the cultivated Mesilla Valley in the same region of New Mexico, Davis (9) ranked wheat sixth in total importance among 25 food items, sorghum (*Sorghum vulgare*) first, and sunflower eleventh. Dillon (2) in a study of 651 crops from 43 Texas counties, found sorghum grain most important volumetrically, followed by croton (*Croton* spp.) and sunflower. From uncultivated shrubland in southeastern New Mexico, Griffing and Davis (8) reported that croton comprised 81.8% of the total volume recovered in 10 dove crops. Croton comprised only 0.5% of the total volume in our study. Doves appear to be versatile and opportunistic feeders throughout their extensive range.

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