FOOD HABITS OF THE RIO GRANDE TURKEY

(*Meleagris gallopavo intermedius*)

ON THE KING RANCH IN SOUTH TEXAS

By

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INTRODUCTION

In 1950 the management of the King Ranch in south Texas decided to initiate a study of the factors that influence the number of wild turkeys. An agreement developed by Mr. Valgene W. Lehmann, Game Manager of the Ranch, and Dr. Walter P. Taylor, former Leader of the Oklahoma Cooperative Wildlife Research Unit, provided for a study of certain phases of the ecology of the wild turkey on the Ranch. The writer was selected to carry on this investigation and spent the period from June, 1950, through July 15, 1951, on the Ranch. The nutritional values of some wild turkey foods were reported in a previous publication (Beck and Beck, 1955). This paper is a report on the foods eaten by the wild turkey. The common and scientific names of plants mentioned follow Fernald (1950) and Hitchcock (1950).

METHODS OF STUDY

The data on the foods eaten are based chiefly on a collection of 115 turkey crops collected systematically to represent all seasons of the year.

The crops were analyzed originally by the standard percentage volume and percentage frequency method. This method has several shortcomings; therefore, a food rank index was worked out in an attempt to better show the interrelationships of the crop's food components.

An index formula was developed (Beck, 1952) for the purpose of combining into one figure the different aspects of percentage volume, relative weight, and the frequency of occurrence. This formula is: $x \cdot y \cdot z = R$

Where:

x equals the per cent volume of the food, expressed as a decimal times 100,

y equals the per cent occurrence of the food, expressed as a decimal,

z equals the specific gravity of the food, and

R equals the index number.

Monthly indices are added together to determine the quarterly or annual index number.

The formula does not take into consideration the availability or acceptability of foods which are also important

factors. Either or both factors can be added to the basic formula at a later time. The specific gravity of a food item is incorporated in the formula because the relative weight of a food is of some importance in determining the rank of that food item. Both methods will be given for the sake of comparison.

Because the King Ranch shows considerable variation in vegetative types and other ecological factors, turkeys were collected from both the Santa Gertrudis and the Norias divisions. Foods eaten on the two divisions were compared to demonstrate differences. Seasonal variations in food habits also were analyzed.

DESCRIPTION OF THE KING RANCH

The King Ranch is an area of approximately 976,000 acres in the coastal region of Texas lying south and west of Corpus Christi, between Robstown and Raymondville. It is divided into four ranch units, two of which were involved in the food habits study.

The northwestern area, called the Santa Gertrudis division, is largely covered by brushy mesquite of varying density interspersed with shrubby prairie called "semi-prairie" by Lehmann (1953). This area has an average rainfall of about 28 inches per year (U. S. Weather Bur., 1951). The southeastern area, called the Norias division, is a mixture of live oak and brushy mesquite of varying density with a strip of shrubby prairie bordering on the Laguna Madre, which is a bay adjoining the Gulf of Mexico. Norias has rainfall which varies from 25 to 32 inches per year (U. S. Weather Bur., 1951, and King Ranch records) depending on the proximity of the station to the Laguna Madre.

There is also a difference in soils. According to Baker (1944), Santa Gertrudis soils are classified as a heavy Rendzina and a red-brown fine sandy loam (Duval-Webb), while the soil at Norias is primarily a deep dune sand (Valentine-Nueces).

FOODS EATEN BY WILD TURKEYS ON THE KING RANCH

The food habits of the wild turkeys were analyzed in order to: (1) compare the foods eaten on parts of the King Ranch where animal and plant associations were conspicuously different; (2) determine the major animal and plant foods at each season of the year; and (3) compare the foods eaten during periods of average rainfall with those taken during drouth years.

Foods Eaten on the Santa Gertrudis and Norias Divisions

As might be expected there was some difference between plant foods used by the turkeys at Santa Gertrudis and those at Norias. The most conspicuous differences are shown in Table 1.

The year of 1950-51 was one of severe drouth in south Texas and was more severe at Santa Gertrudis than at Norias (Table 2).

Table 1. A Comparison Between Food Plant Abundance at Santa Gertrudis and Norias Divisions as Indicated by Crop Contents of Wild Turkeys

	Plants taken chiefly at Santa Gertrudis	Plants taken chiefly at Norias
Common names	Cornfield grass	False Dandelion
	Sand Panic grass	Tickseed
	Grenjeno	Lantana
	Rain sedge	Milk Pea
	Netleaf Hackberry	Beggar Lice
	Wild Lime	Ragwort
	Possum grape	Spurge
	Brazil bush	Wild Grape
	Leatherweed	Winter grass
		Cottontop grass
		Yellow sedge
		Rescue grass
		Wedge grass
		Ironwood
		Sourgrass
		Vasey's grass
		Prickly ash
		Live oak
		Bull Nettle

Table 2. Rainfall During Period of Investigation Compared to the Average Annual Rainfall (U. S. Weather Bur. 1950-51)

	Kingsville[1]	Sarita[1]	Ricardo[1]	Armstrong[2]	Raymondville[2]
Rainfall 1950-51	9.50	9.01	8.98	9.72	16.36
Average annual rainfall	28.--	27.26	26.59	29.--	27.39

1/ Near Santa Gertrudis Division

2/ Near Norias Division

Since the dune sands of Norias retain water near the surface and do not become hardened and desiccated during dry weather, as do most of the soils at Santa Gertrudis, the effects of drouth on plant life at Norias are less severe. The differences in rainfall and soils might in part account for the fact that Norias had a more varied and abundant food supply during 1950-51 (Table 1).

There were also marked differences in the animal foods from the two areas, both as to kind and number of specimens. Table 3 shows the locality differences between the groups of wider divergence.

Table 3. A Comparison in Numbers of Insects Found in Wild Turkey Crops on the Santa Gertrudis and Norias Divisions of the King Ranch

Group	Number of Individuals	
	Santa Gertrudis	Norias
COLEOPTERA		
Tenebrionidae	238	81
Scarabaeidae	51	252
Cantharidae	0	48
Elateridae	31	4
LEPIDOPTERA	27	499
NEUROPTERA	0	8
DIPTERA	0	8
HOMOPTERA	0	38
DIPLOPODA	0	4

The greatest variety of insects and other arthropods was found at Norias. The majority of the insects taken from both areas were slow-moving terrestrial forms.

Insect Foods

Insects were found in 68 per cent of the crops and comprised 10 per cent by volume and more than nine per cent by weight of the annual foods (Tables 5, 6). In the spring months, insects were the most important foods comprising 34 per cent by volume of the diet (Figure 1). In the summer four per cent of the diet consisted of insects; in the fall

about three per cent; and in the winter less than 0.1 per cent. Judd (1905) in compiling work from various sections of the United States stated that 15 per cent of the diet is insects and miscellaneous invertebrates. Good and Webb (1940), Mosby and Handley (1943), and Glover and Bailey (1949) did not consider insects to be a major food for wild turkeys in the areas they studied.

Table 4 lists the insects according to the numbers taken of each group and the number of crops examined containing that group.

Table 4. Animal Foods Found in Wild Turkey Crops Taken on the King Ranch

Insecta Taxonomic Groups	No. of Crops Containing Each Item	No. Taken
ORTHOPTERA		384
Acrididae	43	307
Tettigoniidae	21	66
Gryllidae	5	6
Mantidae	2	2 (egg masses)
Phasmidae	2	2
Blattidae	1	1
COLEOPTERA		1,391
Tenebrionidae	30	319
Chrysomelidae	17	37
Carabidae	9	101
Buprestidae	6	7
Curculionidae	34	536
Cerambycidae	4	6
Scarabaeidae	13	303
Trogidae	2	4
Elateridae	6	35 (mostly larvae)
Erotylidae	1	1
Cantharidae	2	48
Meloidae	1	1
Scolytidae	1	3
HEMIPTERA		50
Pentatomidae	11	22

Table 4.--Continued

Insecta Taxonomic Groups	No. of Crops Containing Each Item	No. Taken
Reduviidae	9	14
Coreidae	1	3
Lygaeidae	2	7
Cydnidae	1	2
LEPIDOPTERA		526 (mostly larvae)
Phalaenidae	7	331
Geometridae	2	129
Pyralidae	1	6
Coamliidae	1	1
HYMENOPTERA		17
Megachilidae	4	4
Ichneumonidae	2	3
Andrenidae	1	1
Tiphiidae	4	5
HOMOPTERA		38
Cicadellidae	5	37
Cicadidae	1	1
DIPTERA		8
Asilidae	3	3
Muscidae	2	2
NEUROPTERA		8
Myremelionidae	4	8
ODONATA		2
ARACHNIDA (Spiders and ticks)		32
DIPLOPODA		4

The four most important families volumetrically were Acrididae, Scarabaeidae, Tenebrionidae, and Phalaenidae.

Dalke, Clark, and Korschgen (1942) mentioned 43 families of insects with the Acrididae and the families of Coleoptera rating high in occurrence. Judd (1905) also placed grasshoppers first on his list of insect foods.

Plant Foods

Plant parts were found in all of the crops and comprised about 75 per cent by volume of the annual foods. Plants made up nearly all of the natural foods in late summer, fall, and winter (Figure 1). The most important plant foods were tree seeds, shrub fruits, green parts of grasses and weeds, and grass and weed seeds. Table 10 in the Appendix gives scientific and common names of the plants and the chief parts eaten by the wild turkeys. The nomenclature used follows Fernald (1950) and Hitchcock (1950).

Seasonal Food Habits

Twenty-five of the crops were collected in January, February, and March (winter); 25 were collected in April, May, and June (spring); 27 were collected in July, August, and September (summer); and 31 were collected in October, November, and December (fall).

Figure 1 gives the seasonal variation in the food groups as shown by per cent volume. Tables 5 and 6 indicate the relative use and value of the different food items.

Table 5. Wild Turkey Foods Eaten on the King Ranch as Compared by Percentage Volume and Frequency*

Foods	Winter	Spring	Summer	Fall
Cottonseed cake	20 - 28	7 - 12	8 - 7	22 - 37
Green matter	50 - 84	4 - 36	15 - 70	11 - 93
Tasajillo seeds	9 - 36	----	2 - 11	3 - 23
False dandelion heads	8 - 12	0.2 - 8	----	----
Bristle grass seeds	2 - 8	6 - 48	0.3 - 41	1 - 29
Snails	2 - 28	1 - 12	2 - 7	1 - 13
Crow foot grass and Rhodes grass seeds	1 - 16	3 - 64	0.3 - 26	1 - 39
Tickseed seeds	2 - 4	----	----	----
Lantana seeds	0.3 - 8	4 - 44	T	0.3 - 23
Milk pea seeds	T	T	T	0.4 - 23
Insects	T	33 - 76	4 - 74	5 - 84
Goatweed seeds	T	0.1 - 20	3 - 15	7 - 55
Wild pea seeds	0.3 - 4	T	----	----
Yellow sedge seeds	0.5 - 4	0.5 - 16	----	0.2 - 16
Wild tobacco heads	0.4 - 4	4 - 28	----	----
Beggar lice seeds	0.1 - 12	0.3 - 16	T	----
Ragwort heads	0.1 - 4	2 - 4	----	----
Partridge pea seeds	T	----	----	T
Eyebane seeds	T	----	----	----
Bull grass seeds	T	14 - 72	0.2 - 26	3 - 52
Cornfield grass seeds	T	6 - 56	5 - 30	----

*First figure is percentage volume, second is percentage frequency.

Table 5.--Continued

Foods	Winter	Spring	Summer	Fall
Mesquite beans	----	4 - 16	13 - 56	3 - 42
Sand-panic grass seeds	T	1 - 40	1 - 15	T
Spurge seeds	----	1 - 20	----	----
Grenjeno fruit	----	0.4 - 8	24 - 56	3 - 6
Ground cherry fruit	----	1 - 4	----	----
Wild grape seeds	----	0.1 - 8	3 - 15	0.5 - 16
Spring rescue grass	----	T	----	----
Wedge grass seeds	----	T	----	----
Purple Ironweed seeds	----	T	1 - 26	2 - 13
Finger grass seeds	----	T	----	----
Sourgrass seeds	----	T	T	----
Vasey's grass seeds	----	T	----	3 - 42
Wormseed seeds	----	T	----	----
Rain sedge seeds	----	T	----	----
Netleaf Hackberry seeds	----	----	5 - 19	0.4 - 9
Wild lime seeds	----	----	2 - 19	----
Prickly ash seeds	----	----	1 - 11	0.1 - 23
Prickly pear seeds	----	----	T	1 - 10
Live oak acorns	----	----	1 - 4	17 - 46
Sedge tubers	----	----	1 - 4	----
Possum grape seeds	----	----	0.1 - 7	----
Plant galls	----	----	0.2 - 11	T
Bull Nettle seeds	----	----	T	----

Table 5.--Continued

Foods	Winter	Spring	Summer	Fall
Cottontop grass seeds	----	----	----	8 - 32
Brazil bush seeds	----	----	----	2 - 6
Winter grass seeds	----	----	----	0.4 - 16
Leatherweed seeds	----	----	----	1 - 3
Skunk daisy seeds	----	----	T	0.2 - 26
Fall rescue grass	----	----	----	0.1 - 6
Milkweed seeds	----	----	----	0.4 - 23
Fall daisy seeds	----	----	----	T
Love grass seeds	----	T	T	----
Flat pea seeds	----	T	----	----
Sandbur seeds	----	T	----	----
Moonseed seeds	----	----	T	----
Sand crab	----	T	----	----
Texas panic grass	----	----	T	----
Other foods (Quail feathers, Sunflower seeds, Buttonbush seeds, Panic grass seeds)	----	T	T	T

Table 6. Wild Turkey Foods Eaten on the King Ranch as Compared by the Food Rank Index

Foods	Winter	Spring	Summer	Fall
Cottonseed cake	14.93	1.89	1.37	14.20
Green matter	13.11	0.41	3.75	3.13
Tasajillo seeds	7.24	----	0.12	1.08
False dandelion heads	0.77	0.01	----	----
Bristle grass seeds	0.41	2.16	0.14	0.26
Snails	0.24	0.17	0.23	0.08
Crow foot grass and Rhodes grass seeds	0.11	0.70	0.03	0.11
Tickseed seeds	0.07	----	----	----
Lantana seeds	0.06	2.73	0.01	0.12
Milk pea seeds	0.04	T	T	0.14
Insects	0.03	25.64	2.44	4.16
Goatweed seeds	0.02	0.04	1.79	6.24
Wild pea seeds	0.02	T	----	----
Yellow sedge seeds	0.02	0.04	----	0.01
Wild tobacco heads	0.01	0.48	----	----
Beggar lice seeds	0.01	0.06	T	----
Ragwort heads	T	0.06	----	----
Partridge pea seeds	T	----	----	0.01
Eyebane seeds	T	----	----	----
Bull grass seeds	T	9.87	0.05	1.48
Cornfield grass seeds	T	3.30	2.14	----
Mesquite beans	----	1.90	11.28	1.38
Sand-panic grass seeds	T	0.48	0.37	----

Table 6.--Continued

Foods	Winter	Spring	Summer	Fall
Spurge seeds	----	0.23	----	----
Grenjeno fruit	----	0.12	23.41	0.92
Ground cherry fruit	----	0.12	----	----
Wild grape seeds	----	0.10	0.64	0.22
Spring rescue grass	----	0.01	----	----
Wedge grass seeds	----	0.01	----	----
Purple Ironweed seeds	----	T	0.17	0.27
Finger grass seeds	----	T	----	----
Sourgrass seeds	----	T	T	----
Vasey's grass seeds	----	T	----	0.96
Wormseed seeds	----	T	----	----
Rain sedge seeds	----	T	----	----
Netleaf Hackberry seeds	----	----	2.36	0.11
Wild lime seeds	----	----	1.02	----
Prickly ash seeds	----	----	0.51	0.31
Prickly pear seeds	----	----	0.10	0.14
Live oak acorns	----	----	0.09	14.01
Sedge tubers	----	----	0.07	----
Possum grape seeds	----	----	0.04	----
Plant galls	----	----	0.02	T
Bull Nettle seeds	----	----	T	----
Cottontop grass seeds	----	----	----	2.97
Brazil bush seeds	----	----	----	0.57
Winter grass seeds	----	----	----	0.16

Table 6.--Continued

Foods	Winter	Spring	Summer	Fall
Leatherweed seeds	----	----	----	0.09
Skunk daisy seeds	----	----	T	0.02
Fall rescue grass	----	----	----	0.01
Milkweed seeds	----	----	----	0.01
Fall daisy seeds	----	----	----	T
Love grass seeds	----	T	T	----
Flat pea seeds	T	----	----	----
Sandbur seeds	T	----	----	----
Moonseed seeds	----	T	T	----
Sand crab	----	T	----	----
Mineral	----	T	----	----
Texas panic grass	----	----	T	----
Quail feathers	----	----	T	----
Sunflower seeds	----	----	----	T
Buttonbush seeds	----	----	----	T
Panic grass seeds	----	----	----	T

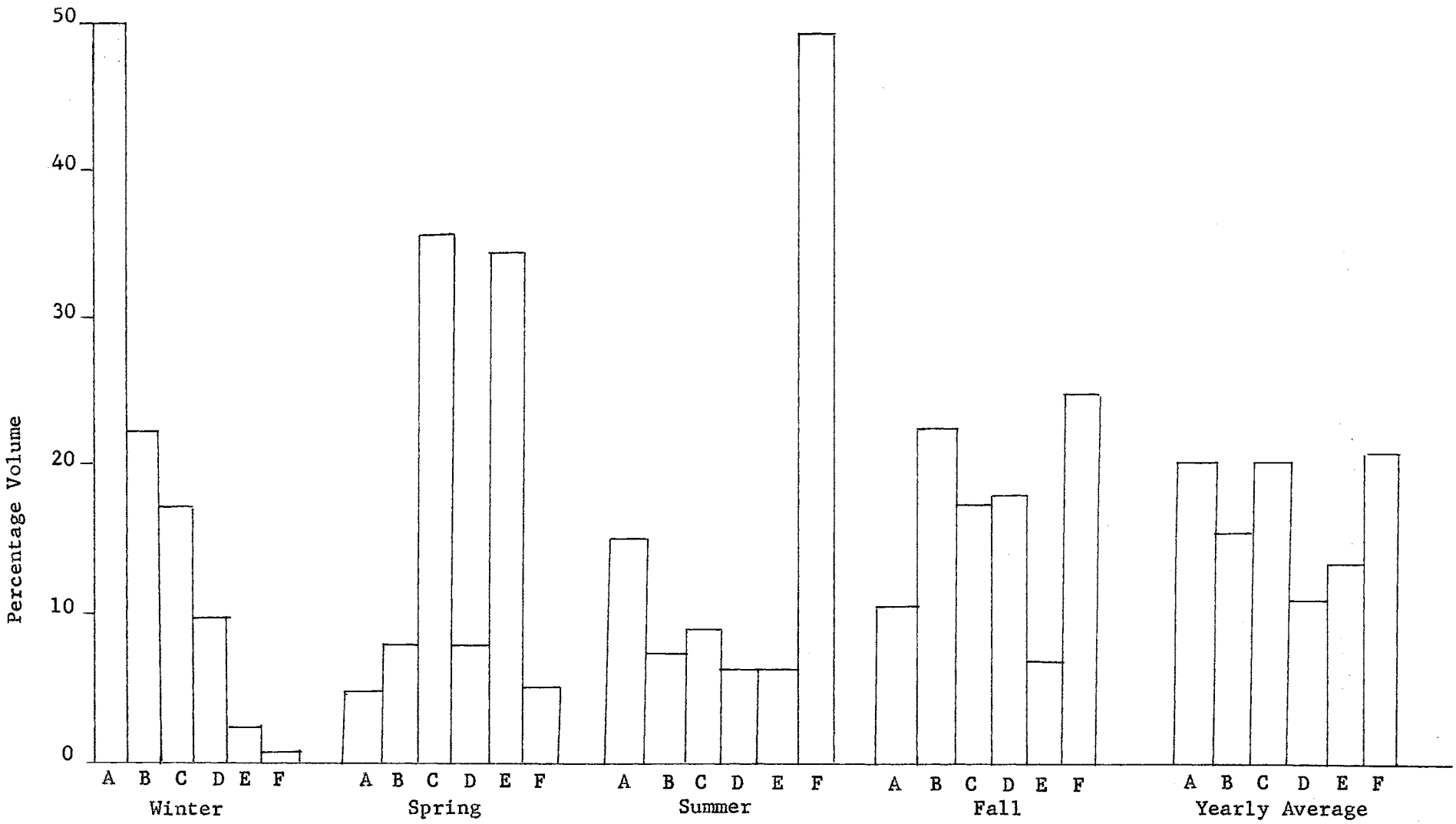

Figure 1. Seasonal Food Habits of the Wild Turkey on the King Ranch

Key

A - Green plants
B - Cottonseed cake
C - Grass seeds & flowerheads
D - Forb seeds
E - Animal matter
F - Tree seeds

Green matter was the primary food in January, February, and March (Figure 1 and Tables 5 and 6). Cottonseed cake, which was second in abundance in January and February of 1951, was not used on the range in March, 1950. Natural foods, other than green matter, comprised only 20 per cent of the volume for the season; most of this volume was taken in March. Cactus seeds comprised 8.8 per cent of the volume, and weed flowerheads comprised 10.5 per cent. Grass and sedge seeds and animal matter were low in volume. Legume seeds comprised a large part of the trace items but were not present in the crops in large quantities. A study of winter foods in central Texas (Walker, 1950) lists many of the same natural foods.

In the spring more than 43 per cent of the food by volume consisted of seeds and flowerheads. Insects made up 33 per cent, a much greater volume than that found in any other season for that group of foods. The tree and shrub seeds began to appear frequently in the crops in the spring and comprised 4.9 per cent of the diet, while weed seeds totaled 11.6 per cent. Listed also under "cottonseed cake" was garbage obtained at a vaquero's camp. Snails were present in smaller volume and in lower frequency in spring than in winter. Grass and legume seeds comprised much of the trace items. Parts of green plants comprised only four per cent of the diet.

Fruits and seeds from shrubs and trees comprised 50 per cent of the summer foods (Figure 1, Tables 5 and 6). Seeds

of all types of plants comprised about 65 per cent. Green matter was found in 70 per cent of the crops and was the most abundant single food by volume in August. Volumetrically, grenjeno fruit ranked highest in July and nesquite beans in September. Animal matter also occurred in most of the crops, but only in small quantities. Snails, however, were taken in larger quantity in summer than in the spring. The volumetric and frequency rankings of grass and weed seeds decreased considerably from the spring to the summer months (Table 5).

During August, there appeared to be a noticeable shortage of seed foods. Most early-maturing seeds are gone by August, and most late-maturing seeds are not yet available. Therefore, August may be a critical period, particularly during drouth years when green plant food is limited.

About 31 per cent, by volume, of the fall foods was obtained from the fruits of shrubs or trees; more than 26 per cent consisted of weed and grass seeds. The most common natural foods, by volume, in October were grass and weed seeds, in November were seeds of all kinds, and in December were acorns and cactus seeds. Animal matter ranked at the bottom of the groups of foods. Webb (1941) in Alabama found that acorns were apparently a preferred fall and winter food for turkeys. Dalke, Clark, and Korschgen (1942) also ranked acrons high in their list of winter foods in Missouri.

Effects of Rainfall

The contents of seven crops which had been collected during the Decembers of 1944, 1946, 1948, and 1949, years of more typical rainfall, were compared with the foods eaten in December, 1950 (Table 7).

The most conspicuous differences were the comparatively heavy use of insects, grass, and weed seeds in the wetter years and the greater utilization of cottonseed cake and green matter in the dry December of 1950. Insects and various seeds apparently are staple foods at this season, with cottonseed cake used as a substitute when available. Variation in the use of acorns was due to the fact that the turkeys had not been collected from the live oak habitats in the earlier period. Possibly the lack of other foods forced turkeys to feed heavily on green plants during December of the dry year, while in more typical Decembers, more seeds and insects were available.

Additional Foods

The foods named in the report were definitely not all of the foods that turkeys ate. Only a limited number of turkeys could be taken for study. Consequently, some locally available foods were missed. A few foods were missed because of a short seeding period. Table 8 illustrates the above points. It includes foods that the turkeys were observed to eat that were not present in the crops analyzed.

Table 7. A Comparison of the Food Index in a Dry December with Decembers Approaching Average Rainfall

Food	Dec. 1950 (10 crops)	Other Decembers (7 crops)
Insects	0.071	9.810
Goatweed seeds	0.006	3.934
Crowfood grass seeds	----	2.343
Wintergrass seeds	0.007	1.871
Skunk daisy seeds	0.011	0.608
Vasey's grass seeds	0.074	0.233
Milk pea seeds	0.013	0.067
Buttonbush seeds	----	0.104
Tasajillo seeds	0.537	0.716
Bull grass seeds	0.006	0.010
Bristle grass seeds	0.017	0.085
Yellow sedge seeds	Trace	0.010
Sunflower seeds	Trace	0.011
Purple Ironweed seeds	----	0.089
Mellonette seeds	----	0.018
Sand Panic grass seeds	----	0.014
Rosinweed seeds	----	0.004
Wild pea seeds	----	0.002
Fall daisy seeds	0.002	----
Fall rescue grass seeds	0.007	----
Prickly ash seeds	0.114	----
Snails	0.059	----
Wild grape seeds	0.212	----

Table 7.--Continued

Food	Dec. 1950 (10 crops)	Other Decembers (7 crops)
Mesquite beans	0.306	0.005
Green matter	1.144	0.115
Live-oak acorns	11.157	0.301
Cottonseed cake	5.166	----
	18.909	20.350

Table 8. Additional Foods That the Wild Turkeys Were Seen Eating on the King Ranch

Scientific Name	Common Name
Sonchus oleraceus	Sow thistle
Sporobolis indicus	Smut grass
Festuca sp.	Fescue grass
Colubrina texana	Hog plum
Condalia obovata	Lote bush
Diospyros texana	Texas persimmon
Eupatorium sp.	Throughwort
Bumelia sp.	Chittamwood
Cyperus sp.	Sedge
Herbertia watsoni	Wild Iris
Commelina sp.	Day-flower
Echinochloa sp.	Barnyard grass
Veronia sp.	Ironweed
Carex sp.	Sedge
Sida sp.	Mallow
Panicum sp.	Panic grass
Eragrostis sp.	Love grass
Aster sp.	Aster
Formicidae	Ants

DISCUSSION OF FOOD USE

This study shows that in 1950 nearly 75 per cent of the crop contents was vegetable matter. The percentage probably would have been higher had it not been for the drouth. For example, the 17 per cent of the diet consisting chiefly of cottonseed cake would not have been available in years of normal rainfall and would probably have been replaced largely by plant and animal material (Table 7). It is the opinion of the writer that plants provide at least 80 per cent of the diet of wild turkeys in years of typical rainfall. Such a percentage is in line with the findings of other investigators. For example, Good and Webb (1940) found that 88 per cent of the crop contents was vegetable matter in Alabama; Judd (1905) found 84 per cent in crops from a number of states; Mosby and Handley (1943) found 94 per cent in Virginia; and Hall (1950) found 89 per cent in Arizona.

Insects made up most of the remainder of the diet of the wild turkey on the King Ranch with very limited amounts of other invertebrate animals.

A considerably larger number of plant species and larger numbers of individual insects were eaten by wild turkeys taken at Norias than at Santa Gertrudis (Tables 1, 3).

Cottonseed cake and parts of green plants were the only foods eaten in quantity at all seasons. Others which seemed to be relatively important over much of the year were insects and the fruiting parts of tasajillo, bristle grass, goatweed, mesquite, and grenjeno.

On a seasonal basis, the wild turkey fed chiefly on the following foods in order of rank: winter--green matter, cottonseed cake, tasajillo, and grass seeds and weed seeds; spring--grass seeds, flower heads, and insects; summer--fruits and seeds of trees, grenjeno, and mesquite were the major foods with some increase in the amounts of green vegetable matter; fall--a more diversified diet with all groups of foods well represented, but live oak acorns, cottonseed cake, goatweed seeds, and insects stood out.

A comparison of December foods from years of more typical rainfall with the very dry 1950 suggested that insects, grass, and weed seeds probably are eaten in larger quantities during more normal years.

The fact that wild turkeys were observed to feed on 19 foods not found in the crops indicates that a wider variety of foods are consumed than were found in this sample of 115 crops. Although, it is believed that the chief foods are represented in this study, it is probably that their relative use would have changed somewhat if more material had been available for analysis.

SUMMARY

An analysis of the foods in 115 wild turkey crops taken at all seasons of the year from the King Ranch in South Texas indicated the following conclusions:

1. In order to correlate the significance of the volume, frequency, and weight of the food, a food rank index was employed.
2. Food habits differed to some extent from one portion of the Ranch to another because differences in the habitats limited the availability of certain foods.
3. Insects and other invertebrate animals made up 10 per cent of the volume and occurred in 68 per cent of the crops.
4. Plants provided about 75 per cent of the volume; some plant material was found in all crops.
5. Cottonseed cake fed to cattle was a leading food in the fall and winter and rated rather high throughout the year. In years of normal rainfall, this source of food is not available to wild turkeys on the King Ranch.
6. On a seasonal basis the leading foods were: winter--green vegetation, cottonseed cake, tasajillo, and grass seeds and weed seeds; spring--insects, grass seeds, and flower heads; summer--fruits and seeds

of trees, particularly grenjeno, mesquite, and green vegetation; fall--cottonseed cake, acorns, goat weed seeds, and insects.

7. A comparison of the findings of 1950 with a small series of crops from wetter years suggests that insects, grass, and weed seeds probably would bulk larger in the diet than they did during the drouth conditions characteristic of this study period.

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APPENDIX

APPENDIX

Table 9. Names of Plants Eaten by the Wild Turkey on the King Ranch

Common Name	Scientific Name	Parts Eaten
Beggar Lice	*Bidens* sp.	Seeds
Bermuda grass	*Cynodon dactylon*	Blades
Brazil bush	*Condalia spathulata*	Seeds and leaves
Bristle grass	*Setaria macrostachya* & *viridis*	Seeds and blades
Bull grass	*Paspalum notatum*	Seeds and blades
	P. plicatulum	
	P. stramineum	
	P. hartwegianum	
Bull nettle	*Cnidoscolus* sp.	Seeds and leaves
Buttonbush	*Cephalanthus* sp.	Seeds
Cornfield grass	*Brachiaria ciliatissima*	Seeds and blades
Cottonseed cake		
Cottontop grass	*Tricachne patens*	Seeds
Crabgrass	*Digitaria* sp.	Blades
Crowfoot grass	*Chloris cucculata* & *latisquamea*	Seeds and blades
Crowfoot grass, Texas	*Chloris texensis*	Seeds
Daisy, Wild	*Xanthisma texana*	Seeds
Dandelion, False	*Pyrrhopappus multicaulis*	Seeds
Eyebane	*Euphorbia maculata*	Seeds

Table 9.--Continued

Common Name	Scientific Name	Parts Eaten
Finger grass	Dactyloctenium aegyptium	Seeds
Goatweed, Common	Croton lindheimeri	Seeds
Goatweed, Little	Croton glandulosus	Seeds
Goatweed, Texas	Croton texensis	Seeds and leaves
Goatweed, Wolly	Croton capitatus	Seeds
Grape, Wild	Vitis mexicana	Seeds and fruit
Grenjeno	Celtis pallida	Fruit and seeds
Ground Cherry	Physalis sp.	Fruit
Hackberry, Netleaf	Celtis reticulata	Seeds
Ironweed, Purple	Palafoxia texana	Seeds
Lady's-sorrel, Creeping	Oxalis corniculata	All
Lantana	Lantana horrida	Seeds
Leatherweed	Jatropha spathulata	Seeds
Lime, Wild	Fagara fruticosa	Seeds
Live oak	Quercus virginiana	Acorns
Love grass	Eragrostic beyrichii	Seeds
Melonette	Melothria pendula	Seeds
Mesquite	Prosopis juliflora	Beans
Milkpea	Galactia grayii	Seeds
Milkweed	Asclepias sp.	Seeds
Moonseed	Menispermaceae (Cocculus sp. ?)	Seeds

Table 9.--Continued

Common Name	Scientific Name	Parts Eaten
Old Man's Beard	*Clematis drummondii*	Leaves
Onion, Wild	*Allium helleri*	All
Panic grass, Lindheimer's	*Panicum lindheimeri*	Blades
Panic grass, Sand	*Panicum firmulum*	Seeds and blades
Panic grass, Texas	*P. texanum*	Seeds
Pea, Flat	*Rhynchosia americanus*	Seeds
Pea, Partridge	*Cassia* sp.	Seeds
Pea, Wild	*Vicia* sp.	Seeds
Plaintain, Mud	*Heteranthera* sp.	All
Possum grape	*Cissus* sp.	Seeds
Prickly Ash	*Xanthoxylum clava-herculis*	Seeds
Prickly Pear	*Opuntia lindheimeri*	Seeds
Ragwort	*Senecio ampullaceous*	Flowerheads
Rescue grass, Fall	*Bromus secalinus*	Seeds
Rescue grass, Spring	*Bromus catharticus*	Seeds
Rhodes grass	*Chloris gayana*	Seeds
Rosinweed	*Heterotheca subaxillaria*	Flowerhead
Sand bur	*Cenchrus* sp.	Seeds
Sedge	*Cyperus rotundus*	Tubers
Sedge, Rain	*Cyperus ferax*	Head
Sedge, Yellow	*Cyperus ochraceous*	Head

Table 9.--Continued

Common Name	Scientific Name	Parts Eaten
Skunk Daisy	Verbesina enceloides	Seeds
Sourgrass	Tricachne hitchcockii	Seeds
Spurges (two kinds)	Euphorbia sp.	All
Sunflower	Helianthus sp.	Seeds
Tasajillo	Opuntia leptocaulis	Seeds and stem
Tickseed	Coroepsis nuecensis	Seeds
Tobacco, Wild	Nicotiana rustica	Flowerheads
Unknown grass rhizomes	?	
Unknown plant galls*		
Vasey's grass	Vaseyochloa multinervosa	Seeds and blades
Vine	Metastelma barbigerum	Leaves
Wedge grass	Sphenopholis sp.	Seeds
Winter grass	Agrostis hiemalis	Seeds
Wormseed	Leguminosae	Seeds

*Good and Webb (1940) also found plant galls.

VITA

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