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WINTER FOOD AVAILABLE TO THE WILD TURKEY IN A HARDWOOD FOREST

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ABSTRACT

An analysis was made of 1132.5 square feet of forest litter collected during the late winter in a bottomland hardwood forest area of the Mississippi Delta. A seed cleaner and a Trier sampler were used to separate food items from litter trash and derive a quantitative estimate. Food available to the turkey averaged 135 lbs. per acre. Sugarberry seeds made up one-half of the entire amount. The next two most abundant items found were insect galls, 22.5 lbs., and grape, 19.6 lbs. The food items most commonly found in analysis of wild turkey crops and droppings were those usually appearing in the least quantity in the litter analysis. Pecan, animal matter, spice bush, and wild grape were the food items most frequently eaten by the wild turkey.

* * * * *

The main purpose of this study was to determine the quantity of food available for the wild turkey (*Meleagris gallopavo silvestris*) prior to the nesting season in a bottomland hardwood area in the Mississippi Delta. A recent study at Mississippi State University (Gardner, 1966) showed that food items utilized by the wild turkeys prior to the nesting season will significantly influence egg production even though the weights of the tested birds are not significantly influenced. Many wild turkey food habitat studies have been reported, but no published research has been found concerning the quantity and availability of food for the wild turkey during the critical pre-nesting period in the Southeastern United States. As another part of this study we investigated the choice of food items made by the turkey in the Delta area.

STUDY AREA

The study area was located on the Donaldson's Point Hunting Club, Gunnison, Bolivar County, Mississippi. The hardwood bottomland was located between the Mississippi River levee at Gunnison and the Missis-

sippi River. The dominant trees were green ash (*Fraxinus pennsylvanica*), box elder (*Acer Negundo*), sugarberry (*Celtis laevigata*), and pecan (*Carya illinoensis*). The average basal area in the alluvial ridges was 25 square feet. The alluvial bottom averaged 43 square feet. The shrubbery layer was relatively sparse and consisted largely of spice-bush (*Lindera Benzoin*), scattered swards of switch cane (*Arundinaria gigantea*), and (*Tovara virginiana*) were found in the understory. Nimblewill grass (*Muhlenbergia Schreberi*), two species of nettle (*Laportea canadensis*), (*Urtica chamaedryoides*), and wild carrot (*Chaerophyllum Tainturieri*) were plants commonly found in the herbaceous strata. (Fernald, 1950).

TECHNIQUES

Location of plots and litter collection

Seven transects consisting of one to three rectangular plots were located on a magnetic bearing of north or south from a road which was oriented east and west. The transects were located 3/10 of a mile apart. The plots were located by pacing and were 160 paces apart. Each plot was 40 paces wide and 80 paces long and encompassed approximately ½ acre. Fifteen of these plots were located on a four square mile area. Two circular mil-acre plots were randomly located in each of the ½ acre plots for a total of 30 mil-acre plots, with an area of 1,306.8 square feet. Litter was removed down to mineral soil and sifted through a ½ inch screen to remove as much twig and leaf material as possible. The screened content was then bagged for transportation to the laboratory.

Laboratory analysis

A seed cleaner, the Clipper M-2 B, manufactured by A. T. Ferrel and Company, Saginaw, Michigan (See Figure 1) was used to separate litter material. It was furnished by the Seed Processing Research Laboratory at Mississippi State University. Screens of two different sizes were used. One was a number 20 round hole screen and the other was a slotted 1-13-1-2. Four different size groups of material were collected from the machine for each mil-acre sample. The first size group consisted of fine, light material blown out the top of the machine by use of a fan (See Figure 1 for points of removal of litter samples); the second size group consisted of heavy material which could not pass through the first screen; the third size group consisted of material small enough to pass through the second screen; the fourth size group consisted largely of soil clumps and large seeds which passed down the auger of the clipper to the bottom of the machine. The larger sized material was screened with hand screens and the food items were separated and collected for weighing.

The two samples of small material which passed through the screens were weighed and placed in a paper bag. It became quickly apparent that the time which would be required to separate all the small seeds the size of grape, *Tovara*, and poison ivy from the large amount of screened litter would be prohibitive. A technique was developed which received the approval of the University statistician to sample the screened material. This sampler contains 3 openings, 9 x 17/32 inches with partitions. It is manufactured by the Seedburo Equipment Company, Chicago, Illinois. The Trier sampler was used to pierce the screened bagged material from 3 different angles, from the left and right sides of the bag and from the bottom of the bag. Three 50 gram samples were thus removed. The material removed was placed in hand screens to help facilitate the removal of the small seeds; these seeds were removed and separated as to species, and weighed in a Harvard Triple Beam Balance. The weights of the seed species found in the three 50 gram samples were then averaged and blown up to secure a total weight of the bagged screened material. This weight and the ascertained weight of large seeds were added together to give the yield on a mil-acre basis. This figure was multiplied by 1000 giving the yield for 1 acre.

Food Habit Study

Crops were collected and analyzed from ten wild turkeys which were collected during the winter period of December 1964 to March 1966.

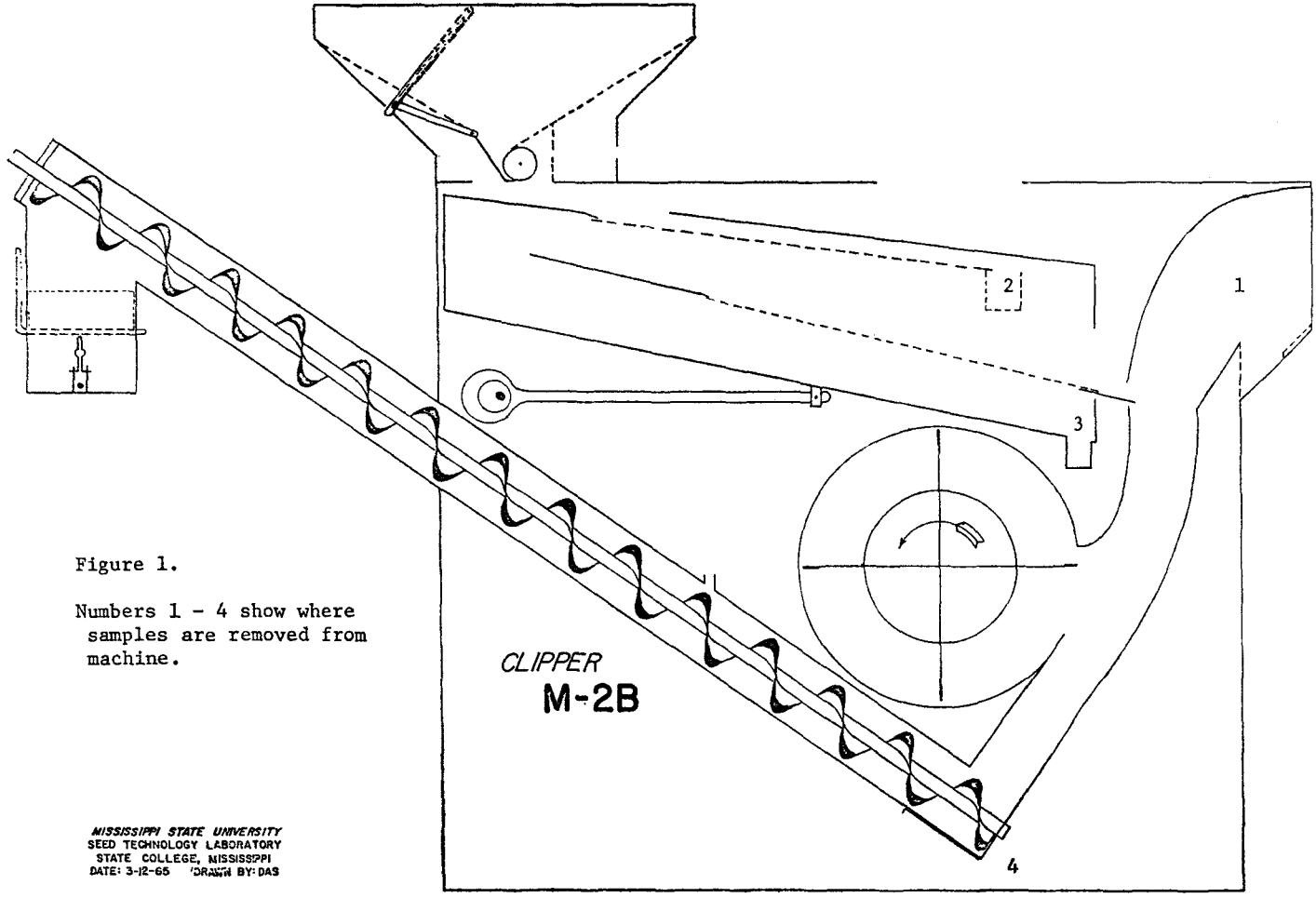

Figure 1.

Numbers 1 - 4 show where samples are removed from machine.

In addition, 46 turkey droppings were collected and analyzed to determine food utilization during the same period.

A quantitative analysis was made by estimating the proportion a particular food item made up of the total bulk (Wilson and Vaughn, 1944). Any food item making up from 100 to 50% of the bulk was rated as abundant, 49 to 20% as medium, 19 to 1% as scant, and less than 1% as trace.

RESULTS

Litter Analysis

Analysis of the litter was made from 26 mil-acre plots; the collection from 4 plots was accidentally destroyed. The major food items found per acre are as follows: sugarberry seeds averaged 67.7 pounds per acre; insect galls, 22.5 pounds; grape, 19.2 pounds; snail shells, 8.4 pounds; *Tovara virginiana,* 3.6 pounds; box elder, 2.9 pounds; ash, 2.8 pounds; poison ivy (*Rhus* spp.), 1.9 pounds; animal matter, 1.85 pounds (primarily insect larvae and adults); pecans, 1.85 pounds; and spice-bush, 0.07 pounds. The total available food (seed and animal matter) was 135 pounds per acre. This total does not include the green vegetation which was composed primarily of the nettle (*Urtica chamaedryoides*) and wild carrot (*Chaerophyllum Tainturieri*) which were abundant over the area.

Crops Analysis (Table I)

All turkeys collected contained large amounts of body fat and seemed to be in good physical condition.

Results of 10 crops collected primarily in February and March showed an average of 27.2 grams of pecans (occurred in 8 crops); grape, 6.7 grams (occurred in 8 crops) with only seeds taken; green matter, 6.9 grams (wet weight and composed primarily of wild carrot and switch cane blades); poison ivy, 0.42 grams (occurred in 7 crops); *Tovara virginiana,* trace (occurred in 5 crops); spice-bush, 0.45 grams (occurred in 2 crops); and acorns, trace (in 2 crops). The animal matter was composed of species from the following families: Coreidae, Carabidae, Chrysomelidae, Formicidae, Noctuidae, Pentatomidae, Reduviidae, Scutelleridae, Stratiomyiidae, Tenebrionidae, Tettigoniidae, and Tipulidae. Animal matter averaged 0.36 grams per crop.

Frequency of Occurrence in Droppings (Table II)

A total of 23 droppings was collected in late winter 1965, and analyzed using per cent occurrence. The number of occurrences of each item was totaled and divided by 23 to determine the frequency. Pecans showed the highest per cent occurrence at 87%. The next seven items were green matter, 61%; sugarberry, 39%; insect fragments, 30%; spice-bush, 26%; and *Tovara* and grape, each 8.7%.

Quantitative Analysis of Food Items From Each Dropping (Table II)

Analysis of the 23 droppings collected in March, 1966 showed the following: pecan, medium; green matter, medium; gravel, scant; spice-bush, scant; insect, scant; poison ivy, scant; and *Tovara,* sugarberry, switch-cane and acorns were all trace. It might be noted that in each dropping, the seed fragments were recorded as abundant, medium, scant, and trace.

DISCUSSION AND CONCLUSION

Through the use of a seed cleaner and a Trier sampler, the litter of 1132.5 square feet of bottomland hardwood forest was sampled in a relatively short time. Although the area studied had an excessive deer population and a large wild turkey population, there was 135 pounds of food per acre available for the wild turkey in the forest litter during the late winter period. Less than half of the amount of food found could be considered choice turkey food.

When the seed species available in the litter are compared to those species used by the wild turkey, there is an inverse ratio. For the most part, the most abundant food items found appeared in the smallest quantity in the turkey crops and droppings analyzed. Sugarberry, which

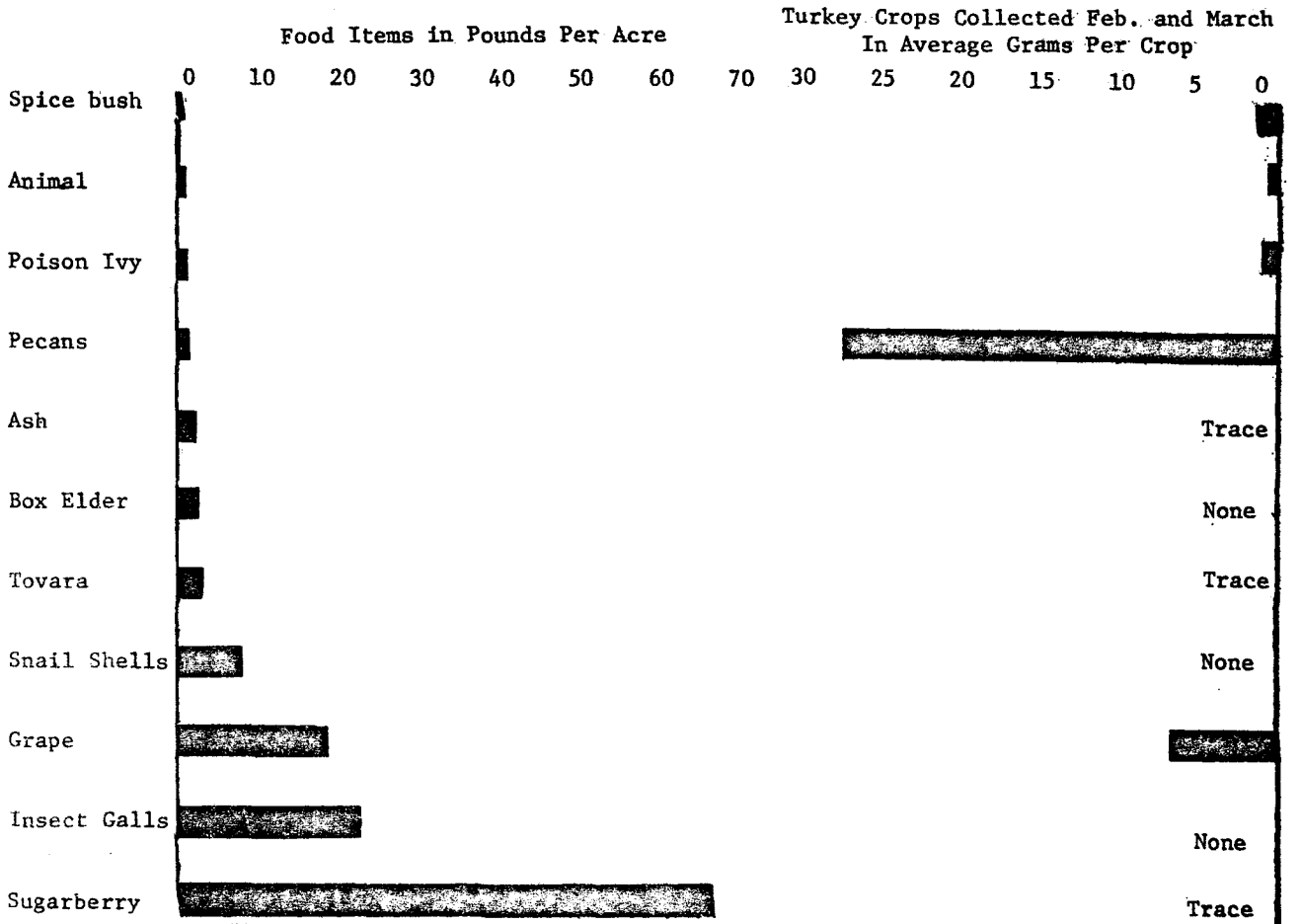

TABLE I. COMPARISON OF FOOD ITEMS PER ACRE WITH ITEMS IN CROPS

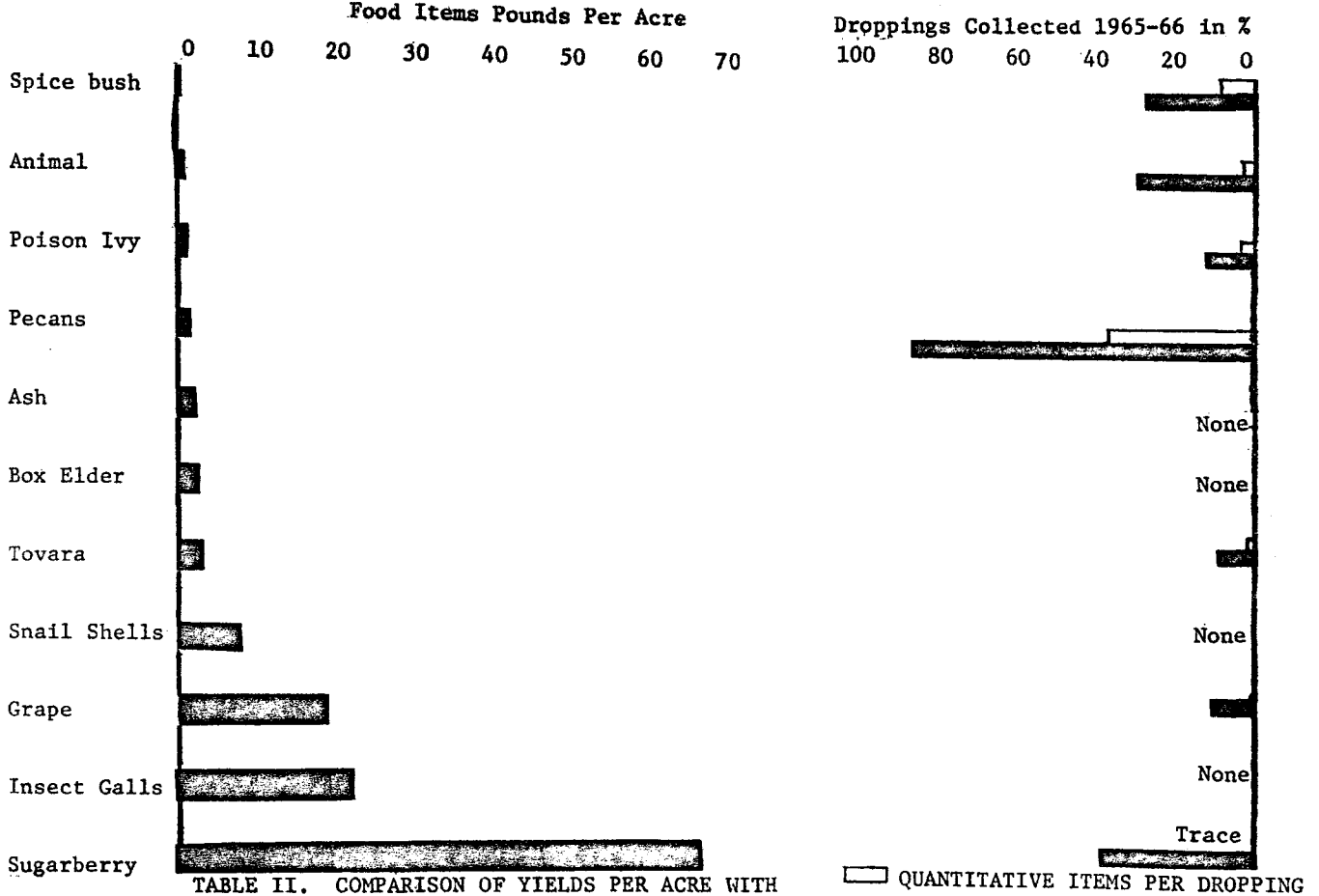

TABLE II. COMPARISON OF YIELDS PER ACRE WITH DROPPINGS.

averaged 67 pounds per acre, and insect galls, which averaged 22 pounds per acre, were the two most common items found, but their use by the wild turkey during the study period was insignificant. Pecan, spice-bush, and animal matter were found to be available in the litter in only small quantities, but they made up a major portion of the contents of the crops and droppings analyzed. The one exception to this inverse ratio was that of the wild grape which was rated third in quantity in the litter study and was found to be utilized frequently by the turkey. The major green plants which were available during this late winter season were the nettle, *Urtica chamaedryoides*, wild carrot and switch cane. Although green material did appear in the droppings, it was impossible to identify the species involved. The green material found in the turkey crops consisted of switch cane leaves and wild carrot.

It is recognized that the quantity of turkey crops and droppings collected was insufficient to draw conclusions concerning the acceptability of the various food items found in the litter. Plans have been made to continue collections of digestive tracts of wild turkey along with the forest litter samples. The information derived from future collections will be used in an effort to determine the carrying capacity of the wild turkey for similar hardwood forest areas of the Mississippi Delta.

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RESPONSE OF WILDLIFE HABITAT TO THE PRESCRIBED BURNING PROGRAM ON THE NATIONAL FORESTS IN SOUTH CAROLINA

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INTRODUCTION

Prescribed burning is an important management tool on the two National Forests in South Carolina. The Francis Marion National Forest in the coastal plain area has been using prescribed burning in resource management since 1947. Currently 43,000 acres of the total 245,000 acres are burned annually. The Sumter National Forest in the rolling piedmont area has been using prescribed burning since 1960. Currently approximately 1,000 acres of the total 342,000 acres are burned annually.

All use of fire is based on a detailed prescription by a professional forester and is scheduled under precise conditions of weather to obtain specific results by specific techniques.

The bulk of the burning is performed to control undesirable understory species and reduce accumulation of flammable material. Other burns are conducted for planting site preparation, seedbed preparation, range improvement, brown-spot control and wildlife habitat improvement.

There is no set burning interval on the National Forests. Burning