

FOODS OF THE WILD TURKEY IN THE WHITE RIVER BOTTOMLANDS OF SOUTHEASTERN ARKANSAS

BY BROOKE MEANLEY

THE bottomland hardwoods of the lower Arkansas, White and Mississippi rivers, form one of the two best areas for the Wild Turkey (*Meleagris gallopavo silvestris*) in the state of Arkansas. The wilderness aspects of the area, inaccessibility of many sections, year around abundance of food, and an extensive refuge area along the lower White River provide conditions for maintaining a fairly stable turkey population. The Wild Turkeys found in this locality are apparently of a purer strain than those occurring in the south-central pine-hardwoods section of the state, a more accessible area in which there have been some introductions from game farms.

During the period 1950–1955, considerable information concerning the food of the turkeys in the White River bottomlands of Arkansas, Desha and Phillips counties in southeastern Arkansas was obtained and is here reported.

HABITAT TYPES

The lower White River area is characterized by a typical southern bottomland hardwoods forest, which is subject to flooding almost every winter and spring. In this bottomland forest elevation and soils are the principal physiographic features that determine characteristic plant communities or forest types.

In low, poorly-drained flat areas the overcup oak (*Quercus lyrata*)–bitter pecan (*Carya aquatica*) type (Putnam, J. A., 1951. *Occ. Paper 116, Southern Forest Exper. Sta., U.S. Forest Service*) is predominant and relatively unimportant to the turkey.

The sweet gum (*Liquidambar styraciflua*)–water oaks (*Quercus* spp.) type (*ibid*) is found throughout much of the better drained part of the first bottoms, and, when not inundated, is widely used by the turkeys when foraging. Characteristic species of this type (Fig. 1) are sweet gum, water oak (*Quercus nigra*), Nuttall oak (*Quercus Nuttallii*), willow oak (*Quercus phellos*), American elm (*Ulmus americana*), sugarberry (*Celtis laevigata*), and green ash (*Fraxinus pennsylvanica*, var. *lanceolata*). Secondary species are red maple (*Acer rubrum*), cedar elm (*Ulmus crassifolia*), and southern red oak (*Quercus falcata*). Plants commonly found in the shrub strata of this forest are swamp privet (*Forestiera acuminata*), deciduous holly (*Ilex decidua*), haw (*Crataegus* sp.), and saplings of the several trees predominant in this type. Common lianas include greenbriar (*Smilax* spp.), grape (*Vitis* spp.), supplejack (*Berchemia scandens*), Virginia creeper (*Parthenocissus quinquefolia*), peppervine (*Cissus* sp.), and poison ivy (*Toxicodendron radicans*).



FIG. 1. Open, park-like woods of Sweet Gum—Water Oaks type in first bottoms of lower White River. Wild Turkeys sought food in such sites in winter and early spring. Photograph by Peter J. Van Huizen.

Sweet gum, sweet pecan (*Carya illinoensis*) or southern red oak are often predominant on well-drained first-bottom ridges. Boykin's dioclea (*Dioclea multiflora*), a leguminous vine that produces a large seed, is strikingly abundant on these ridges. This first-bottom ridge type is the finest for turkey use; and it is not flooded except by unusually high overflows, perhaps once in seven or eight years.

Cypress (*Taxodium distichum*) and tupelo gum (*Nyssa aquatica*) are characteristic trees of bayous that flow into the White, but these do not rate as food producing trees for the turkey in this area.

Ox-bow lakes that are dry in summer are characteristic of the White River bottoms. These lake beds characteristically are surrounded by cypress trees but the beds are grown to grasses, sedges and other herbaceous vegetation. Grasses in the dry lake beds are utilized heavily by turkeys in droughty summers. Many of the ox-bow lakes are close to the river and the turkeys work back and forth to sand bars where they also feed on seeds of grasses, as well as grasshoppers (Orthoptera) and other insects.

The size of the present turkey population in the southeastern Arkansas bottomlands area is unknown. The last three years (1952–53–54) have been dry and have therefore favored the turkey population along the lower White,



FIG. 2. Sand bar along the lower White River used in late summer and fall by Wild Turkeys feeding on crabgrass seeds. Photograph by Peter J. Van Huizen.

which is normally subject to considerable overflow during the late winter and spring. During the fall many sand bars are exposed by low water stages (Fig. 2). In August, 1954, one observer in a boat counted 112 turkeys feeding on sand bars along a 12-mile stretch of the river, beginning at the southern boundary of the refuge and running north. Other observers counted 10 separate broods, totalling 110 turkeys along a six-mile stretch of the river, from July 17 to July 20, 1954.

FOODS TAKEN

A wide variety of plant and animal foods in the bottomlands are available to turkeys throughout the year. Fruits, seeds and herbaceous leaves form the great bulk of the turkey's food. Insects, while important on the basis of their frequency of occurrence in crops, gizzards and droppings, were consistently low in volume.

Crops of Wild Turkeys examined during the spring hunting season following a year when there is a good crop of sweet pecan mast usually contained from two or three to 15 whole nuts of this species (Fig. 3). During years of poor pecan mast, crops and gizzards were usually crammed full of sugar-



FIG. 3. Contents of the crop of a Wild Turkey collected in southeastern Arkansas in April, 1952. Food items include jack-in-the-pulpit leaves (upper left), poison ivy fruits and seeds (lower left), snails, sweet pecan nuts, scarabaeid beetles (center), grit and seeds of *Celtis* and *Berchemia* (right).

berry fruit, poison ivy fruit and seeds, oak mast, or perhaps some rather unusual plant food such as the catkins of cottonwood (*Populus deltoides*), flowers of the crossvine (*Bignonia capreolata*) and buttercup (*Ranunculus* sp.), or pods of vetch (*Vicia* sp.).

The seasonal abundance of food is further reflected in the turkey's diet as seen by an analysis of droppings gathered during June from bottomland woods in which blackberries or dewberries (*Rubus* sp.) were predominant; and in a series of droppings collected from sand bars and dry lake beds in the fall in which seeds of crabgrass (*Digitaria* sp.) and sprangletop grass (*Leptochloa panicoides*) respectively, were major foods on both a frequency of occurrence and volumetric basis. Snowbell (*Styrax americana*) had a high palatability rating in late summer and early fall with turkeys feeding along the river and in nearby dry lake beds. This woody shrub is usually found around the margins of old river bed lakes.

Orthoptera (mainly Acrididae and Gryllidae) and a number of slow-

TABLE 1
PRINCIPAL FOODS OF THE WILD TURKEY ON FIRST BOTTOM RIDGES ALONG
THE WHITE RIVER IN ARKANSAS
 (Per cent occurrence)

April — 22 crops or gizzards PLANT:	June — 60 droppings PLANT:	Winter — 112 droppings PLANT:
<i>Celtis laevigata</i> fruit and seeds 90	<i>Rubus</i> sp. seeds* 87	<i>Quercus</i> sp. mast 94
<i>Carya illinoensis</i> nuts .. 55	<i>Carex</i> sp. achenes and perigynia 58	Gramineae blades 78
<i>Nyssa sylvatica</i> fruit and seeds 55	<i>Quercus</i> sp. mast 53	<i>Toxicodendron radi-</i> <i>cans</i> seeds 60
<i>Quercus</i> sp. mast 50	<i>Panicum</i> sp. seeds 40	<i>Crataegus</i> sp. seeds 47
<i>Crataegus</i> sp. seeds 45	<i>Forestiera acuminata</i> seeds 37	<i>Carex</i> sp. seeds 21
<i>Vitis</i> sp. fruit 40	<i>Rumex acetosella</i> leaves 35	<i>Vitis</i> sp. seeds 20
<i>Berchemia scandens</i> seeds 40	<i>Celtis laevigata</i> seeds.. 35	<i>Celtis laevigata</i> seeds .. 18
<i>Toxicodendron radicans</i> fruit and seeds 36	Undet. herbaceous dicot leaves 25	Undet. herbaceous dicot leaves 18
<i>Polygonatum</i> sp. seeds 36	<i>Ranunculus</i> sp. seeds.. 15	<i>Nyssa sylvatica</i> seeds .. 14
Undet. galls 32	<i>Styrax americana</i> seeds 15	<i>Carya illinoensis</i> nuts .. 12
Undet. seeds 27	<i>Alopecurus</i> sp. glumes 13	
<i>Arisaema</i> sp. leaves ... 23	Gramineae blades 10	
Undet. herbaceous dicot leaves 23		
<i>Ranunculus</i> sp. seeds.. 18		
<i>Vicia</i> sp. pods 18		
<i>Ilex decidua</i> seeds 13		
ANIMAL:	ANIMAL:	ANIMAL:
Scarabaeidae 18	Scarabaeidae 47	<i>Nezara viridula</i> 44
Coleoptera 18	Formicidae 28	<i>Arilus cristatus</i> 28
Gastropoda 13	Coleoptera 12	Scarabaeidae 20
		Undet. insects 13

* With the exception of grass seeds, which were deliberately taken, other seeds were usually the remains of what were fleshy fruits at the time of ingestion.

moving insects belonging to the Scarabaeidae and Hemiptera were found to be important in the turkey's diet. Two large hemipterans, the southern green stinkbug (*Nezara viridula*) and wheel bug (*Arilus cristata*), so abundant in the winter droppings of turkeys, occur commonly throughout the winter beneath the leaf mantle of the riverbottom hardwoods.

During the late summer and early fall such crop pests as the fall armyworm (*Laphygma frugiperda*), spotted cucumber beetle (*Diabrotica undecimpunctata*), and rice stinkbug (*Solubea pugnax*) occur abundantly among the grasses and sedges of dry lake beds where they are taken readily by turkeys.

Data presented below were based on an analysis of 1026 droppings and 22 crops or gizzards, supplemented by field observations.

Crops and gizzards were obtained from local hunters. Most of the droppings were collected on the White River National Wildlife Refuge by Peter J. Van Huizen, Manager, and Lloyd C. MacAdams, Patrolman. The droppings

TABLE 2
PRINCIPAL FOODS OF THE WILD TURKEY ON SAND BARS ALONG THE
WHITE RIVER IN ARKANSAS
(Per cent occurrence)

Summer — 200 droppings		Fall — 310 droppings	
PLANT:		PLANT:	
<i>Digitaria sanguinalis</i> seeds	75	<i>Digitaria sanguinalis</i> seeds	77
<i>Celtis laevigata</i> seeds	67	<i>Styrax americana</i> seeds	73
<i>Styrax americana</i> seeds	67	<i>Echinochloa crus-galli</i> seeds	66
Gramineae blades	14	<i>Vitis</i> sp. seeds	60
<i>Panicum</i> sp. seeds	10	<i>Panicum capillare</i> seeds	59
		<i>Quercus</i> sp. mast	24
		<i>Leersia oryzoides</i> glumes	24
		<i>Digitaria (ischaemum)</i> seeds	23
		<i>Bumelia</i> sp. seeds	20
		<i>Panicum</i> sp. seeds	18
		<i>Solanum nigrum</i> seeds	11
ANIMAL:		ANIMAL:	
Scarabaeidae	49	<i>Solubea pugnax</i>	52
Formicidae	45	Acrididae	40
Acrididae	27	Other Orthoptera	20
		Scarabaeidae	18
		Formicidae	10

TABLE 3
PRINCIPAL FOODS OF THE WILD TURKEY IN DRY LAKE BEDS ALONG THE
WHITE RIVER IN ARKANSAS
(Per cent occurrence)

Summer — 100 droppings		Fall — 244 droppings	
PLANT:		PLANT:	
<i>Styrax americana</i> seeds	98	<i>Leptochloa panicoides</i> seeds	100
<i>Celtis laevigata</i> seeds	72	<i>Carya illinoensis</i> nuts	65
<i>Leptochloa panicoides</i> seeds	66	<i>Bumelia</i> sp. seeds	52
<i>Vitis</i> sp. seeds	66	<i>Vitis</i> sp. seeds	52
<i>Bumelia</i> sp. seeds	16	<i>Echinochloa crus-galli</i> seeds	41
Gramineae blades	16	<i>Styrax americana</i> seeds	40
<i>Digitaria</i> sp. seeds	10	<i>Leersia oryzoides</i> glumes	29
		<i>Toxicodendron radicans</i> seeds	16
ANIMAL:		ANIMAL:	
Scarabaeidae	78	<i>Diabrotica undecimpunctata</i>	31
Gryllidae	74	Scarabaeidae	27
Acrididae	70	Orthoptera	23
<i>Laphygma frugiperda</i>	14	Gryllidae	21
Gastropoda	14	Undet. insects	15
Formicidae	12	<i>Laphygma frugiperda</i>	13
<i>Solubea pugnax</i>	10	<i>Solubea pugnax</i>	13
Pentatomidae	10		
Insect eggs	10		

were found by working behind flocks and checking fresh scratchings; by looking along paths in wooded areas and around water holes on logging roads frequented by turkeys; and in dry ox-bow lake beds and on sand bars.

The analysis of food materials was computed on a frequency of occurrence basis by habitat and period. Food items occurring in less than 10 per cent of the droppings, crops and gizzards in any series are not listed in this report (Tables 1-3).

SUMMARY

A knowledge of turkey foods in the White River bottoms of southeastern Arkansas was obtained by an analysis of 1026 droppings and 22 crops and gizzards collected from various habitats during the period 1950-1955. Acorns, sugarberries, pecans, poison ivy fruit, blackberries and blades of grass were important foods in the first bottoms; seeds of crabgrass dominated droppings collected from sand bars in summer and fall; while in dry ox-bow lake beds, feathergrass seeds were the principal food in the fall, and styrax fruit in the summer.

ACKNOWLEDGMENTS

The writer is indebted to Fish and Wildlife Service co-workers A. C. Martin and Johnson A. Neff for the identification of several food items, and to co-workers Charles C. Sperry, Vincent H. Reid and Peter J. Van Huizen for reviewing the manuscript. Anna Gilkeson Meanley assisted in the field work.

U.S. FISH AND WILDLIFE SERVICE, ALEXANDRIA, LOUISIANA, NOVEMBER 15, 1955

NEW LIFE MEMBER

Albert Schnitzer, a native of New Jersey, graduated from New York University in 1934. After teaching mathematics for a short time, he entered business and now runs a plant which specializes in stainless steel machinings. He married Eva Feder of Perth Amboy, New Jersey, with whom he shares a lively interest in the natural sciences. A bander for the past five years, he is shown here among his traps at his home at Elizabeth, New Jersey, where this March he and his wife banded 259 red-polls. His hobbies include botany and photography, and he has travelled extensively in Central America, South America, and in the Caribbean.

