

Map 2. Movements (2.4 acres) of fawn 4A-72 that died, Cookson Refuge, Eastern Oklahoma, June 8 to June 28, 1972.

THE MONTHLY AVAILABILITY AND USE OF BROWSE PLANTS BY DEER ON A BOTTOMLAND HARDWOOD AREA IN TENSAS PARISH, LOUISIANA

*Patrick K. Murphy¹ & Robert E. Noble
School of Forestry and Wildlife Management
Louisiana State University
Baton Rouge, Louisiana 70803*

ABSTRACT

The monthly availability and use of browse plants for food by white-tailed deer (*Odocoileus virginianus*) was studied from February 1971 through January 1972 on Durango Hunting Club, a bottomland hardwood area in Tensas Parish, Louisiana. A modified version of the Aldous Deer Browse Survey Method was used to determine the monthly availability of all plants present and the actual use of these plants by deer. A total of 141 plant species and plant groups was

identified and studied. Eighty-one (57.4%) of the 141 plant species and groups were utilized to some extent by deer. The largest number of plant species and groups (100) was available in August, while February had the smallest number (32). During the month of February, 16 (50.0%) of the 32 available species and groups were utilized by deer as compared to August when 30 (30.0%) of the 100 were browsed. Over the 12-month period, the mean number of browsed species and groups was 26 (36.6%). The number of plant species and groups utilized by deer for any one month for this period did not exceed 50% of the total number of plant species and groups available.

On a monthly basis, dewberry (*Rubus* spp.)² was the most important deer browse plant in five of the months (January, February, March, November, and December). Aster (*Aster* spp.) was the most important deer browse plant in April and June. Trumpet creeper (*Campsis radicans*) ranked first in May, July, August, September and October.

The most abundant plants on a monthly basis were dewberry and poison ivy (*Rhus radicans*). Dewberry ranked first in January, February, March, September, October, November, and December. Poison ivy was the most abundant plant in April, May, June, July, and August.

On a seasonal basis, dewberry and trumpet creeper were the top ranking deer browse plants. Dewberry was the top deer browse plant in spring and winter, and trumpet creeper was the most important plant in summer and fall.

Dewberry and poison ivy were the most abundant plants for the four seasons. The most abundant plant in spring, fall and winter was dewberry, while poison ivy was the most abundant plant for summer.

For the 12-month period as a whole, dewberry ranked first both as the most important deer browse plant and as the most abundant plant.

The mast of sweet pecan (*Carya illinoensis*) and the fruit and foliage of cultivated soybeans were also heavily used as food by deer on the study area.

INTRODUCTION

The land of Durango Hunting Club is representative of the bottomland hardwood region in the lower Mississippi River Valley. This bottomland hardwood region is one of the most productive game and fish habitats on the continent (Yancey, 1969). These hardwoods have the highest deer-carrying capacity of any other forest type in the southeast. According to Glasgow and Noble (1971), the reasons for this high wildlife productivity are high soil fertility, abundant moisture, high quality native foods in great quantity, and in many areas, the ready availability of agricultural crops.

Bottomland hardwoods are being cleared and planted in row crops at an accelerated rate. However, many thousands of acres of bottomland hardwoods, especially those along the main rivers, are subject to flooding and therefore cannot be converted to row crops. This segment of the region may remain in forest and deer habitat indefinitely while acreages within the region not subject to flooding are cleared and planted in crops. Deer from these surrounding woods heavily utilize crops whenever native foods become scarce. Farmers will not tolerate heavy and extensive usage of crops by deer. Depredating deer are shot in the fields, and for this reason deer will eventually exist in numbers only in those bottomland hardwoods which provide them with adequate natural foods.

Those bottomland hardwoods subject to flooding or otherwise unfit for agricultural crops will be the last to be cleared if, these acreages are ever

¹Present Address: Woodward-Envicon, Inc. Environmental Consultants, Sutton Plaza, Clifton, New Jersey 07012.

²Scientific nomenclature by Radford, et al. (1968), except where otherwise noted.

managed for anything other than timber. They will sustain deer herds for many years to come.

As the acreage in timber dwindles, remaining stands will be more intensively managed for forest products. Hardwood forestry can be beneficial to deer provided the seasonal needs of deer are fully understood. Very little work has been done on the seasonal food habits of deer inhabiting the bottomland hardwood region of the lower Mississippi Valley. We know practically nothing about the chronology and use of plants by deer in hardwoods, a portion of which is subject to flooding.

Sheffield (1957) studied the density of woody and herbaceous browse species and their utilization by deer on Fisher Game Preserve, Tensas Parish, Louisiana for the summer (June through September) of 1956. Noble (1967) reported on the late summer (August) availability of plants and their use by deer on a 4,000-acre area of bottomland hardwoods in Tensas Parish, Louisiana and on a 1,000-acre tract in Jefferson County, Mississippi. McIlwain (1965) studied the summer (June through August) browse production on two Louisiana bottomland hardwood areas (Ouachita and Madison Parishes), but he considered only 15 plant species.

In the bottomlands the plant type does not remain constant from month to month. Some plant species are present year-round; others are on the forest floor for nine months; and still others remain for only three or four months. As a result of this variability of plant species availability during the 12 months of a year, it is inevitable that the plant species eaten and the extent to which these plants are eaten would vary among seasons and among months within seasons.

The purpose of this study was to determine the monthly availability and the extent of use of browse plants for food by deer on the lands of Durango Hunting Club.

STUDY AREA

The study area, Durango Hunting Club, is a 5,000-acre tract in Tensas Parish, Louisiana situated east of the Mississippi River near Church Hill, Mississippi. Although practically surrounded by Mississippi, the area is part of the state of Louisiana. The Louisiana land was isolated on the east side of the Mississippi River by a change in the river's main channel around the turn of the century.

Durango is also isolated in terms of accessibility to man, being bordered on the west by the Mississippi River, on the south and east by Coles Creek and on the north by Gum Ridge Chute (an old river channel). One dirt road, impassable when wet except by four-wheel drive vehicle, leads 1.4 miles from a public dirt road onto the area. There are no roads on the area but several jeep trails are maintained for access on the land.

The area embraces 3,700 acres (74%) in woods, 200 acres (4%) in land recently clear-cut and destined to be cleared for row crops, 700 acres (14%) in agricultural crops (corn and soybeans), and 400 acres (8%) in lakes and sloughs.

Approximately 2,300 acres are owned by the R. M. Stricker Estate, Woodville, Mississippi and 2,200 acres are owned by the International Paper Company, Natchez, Mississippi. The timberlands are managed by professional foresters, and the timber stands have undergone partial cuttings for many years. The area has no fire history within the last 75 years, and grazing by domestic livestock was discontinued on the area in 1963.

Portions of the area are subject to annual inundation from flood waters of the Mississippi River. During normal years not more than 15 to 25 percent of the area is flooded. During unusually high water up to 30 to 40 percent of the land may be flooded for a few days to several weeks.

The overstory consists primarily of sweet pecan (*Carya illinoensis*), hackberry (*Celtis laevigata*), cottonwood (*Populus deltoides*), green ash (*Fraxinus*

pennsylvanica), sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), sweet-gum (*Liquidambar styraciflua*), persimmon (*Diospyros virginiana*), honeylocust (*Gleditsia triacanthos*), black willow (*Salix nigra*), and bitter pecan (*Carya aquatica*).

Less common overstory species include water oak (*Quercus nigra*), nuttall oak (*Quercus nuttallii*), overcup oak (*Quercus lyrata*), American elm (*Ulmus americana*), and baldcypress (*Taxodium distichum*).

Some common shrubs are deciduous holly (*Ilex decidua*), swamp dogwood (*Cornus drummondii*), and haws (*Crataegus* spp.). Sloughs and lake margins support dense stands of swamp privet (*Forestiera acuminata*) and buttonbush (*Cephalanthus occidentalis*).

METHODS

Plant availability and usage by deer were sampled using a modified version of the Aldous Deer Browse Survey Method (Aldous, 1944, deVos and Mosby, 1966). The method was developed primarily for evaluating winter browsing by deer but the principle was revised and used for sampling availability and usage during any season (Noble, 1967).

210 milacre circular plots (radius=3.7 feet), located at four-chain intervals along compass lines 12 chains apart, were sampled monthly from February 1971 through January 1972. These 210 plots were originally sampled on seven different tracts but because of similarities in vegetation, two of the tracts were consolidated. Each tract possessed some vegetational variation which was different from the other four tracts.

Tracts were set up to include the vegetational variations that existed on the area. Tract 1 consisted of rather open woods with the exception of rattan-haw thickets on the eastern end. Two large swamp privet sloughs skirt two ridges of mature sweet pecan in the central and western portion of the tract. These ridges support a relatively light understory of aster (*Aster* spp.). The entire area of tract 2 supports a sparse, immature stand of sweet pecan with a dense understory of dewberry (*Rubus* spp.), aster and buckvine (*Ampelopsis arborea*). Tract 3 is the highest in elevation of the five tracts and has a dense overstory of pecan, boxelder, hackberry and sweetgum. It supports the largest variety of understory plant species. Tract 4 is predominately covered with haw-hackberry-deciduous holly thickets interlaced with several small sloughs. The overstory consists primarily of an over-mature stand of sweet pecan and cottonwood. Tract 5 represents an area that was clear-cut three years ago. This tract consists of a rank understory of dewberry, goldenrod (*Solidago* spp.) and giant ragweed (*Ambrosia trifida*) with a very sparse overstory. Tracts 1, 2 and 4 are subject to annual inundation in which approximately 50% of each tract is flooded from a few days to several weeks.

Two variables (percent cover and percent utilization) were estimated on each plant species present in each plot. Percent cover was measured by visual estimate of the percent of ground covered by any portion of the plant specimen below a height of six feet above the ground. Percent utilization is the degree to which the plant species had been browsed by deer and was determined by visual estimate of the percent of current year's growth consumed by deer. The median of each 10% bracket (5% for 1 to 10%, 15% for 10 to 20%, etc.) was used for both cover and utilization. For heavily browsed specimens, an estimate was made of percent cover as it occurred prior to utilization by deer.

After data were collected for the 12 months, the following was calculated by month, season (fall, winter, spring and summer) and year for each plant species or plant group present on the study area:

¹Scientific nomenclature from Harrar and Harrar. (1946).

$$\text{Average cover percentage} = \frac{\text{Total percent cover entries for the species}}{\text{Total number of plots}}$$

$$\text{Average utilization percentage} = \frac{\text{Total utilization entries for the species}}{\text{Number of plots where the species is found}}$$

$$\text{Utilization Factor} = (\text{Average percent cover}) (\text{Average percent utilization})$$

$$\text{Percent of food available} = \frac{\text{Average percent cover of the species}}{\text{Total percent cover figures for all species}}$$

$$\text{Percent of food eaten} = \frac{\text{Utilization factor of the species}}{\text{Total utilization factors for all species}}$$

Percent of browse available indicates the actual availability of a plant species to deer on the area as compared to all other species present. Percent of food eaten is indicative of the importance of a species as a browse plant to deer. Thus, the higher the percent of food available for a given species the more abundant this species is on the area, and the higher the percent of food eaten for a given species the more deer utilize this species as food.

RESULTS AND DISCUSSION

Data were analyzed by month, season and year. Over the 12-month period (February 1971 - January 1972), 141 plant species and species groups (two or more species) were identified and studied. It was found that 81 (57.4%) of these 141 species and groups were utilized to some extent for food by deer during this period.

The month with the largest number of species and groups (100) was August, while the month of February with 32 species and groups had the smallest number. During August, 30 (30.0%) of the 100 species and groups available were utilized by deer. In February, 16 (50.0%) of the available 32 species and groups were browsed. Figure 5 and Table I indicate the monthly abundance of plant species and groups as compared with the number of plants that were utilized by deer. The mean number of plant species and groups by month was 71, while the mean number of species and groups utilized by deer was 30 (42.5%).

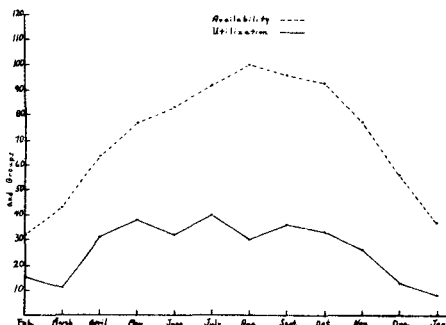


Figure 5. Monthly number of plant species and groups available and utilized on Durango Hunting Club, February 1971 - January 1972.

Table 1. The Five Most Important Deer Browse Plants by Month on Durango Hunting Club, Tensas Parish, Louisiana, February 1971 - January 1972.

Month	Plants	% of Browse Eaten (% of Browse Available)	No. of plant species or groups utilized by deer of those species or groups available
Feb.	Dewberry (<i>Rubus</i> spp.)	91.6 (33.5)	16 of 32 (50.0%)
	Vetch (<i>Vicia</i> spp.)	2.0 (10.2)	
	Oak (<i>Quercus</i> spp.)	1.8 (1.2)	
	Sedge (Cyperaceae)	1.7 (5.1)	
	Aster (<i>Aster</i> spp.)	.9 (13.4)	
	Total	98.0 (63.4)	
	March	Dewberry (<i>Rubus</i> spp.)	
Unknown		2.4 (2.5)	
Curly Dock (<i>Rumex crispus</i>)		.9 (0.1)	
Sedge (Cyperaceae)		.7 (5.2)	
Boxelder (<i>Acer negundo</i>)		.6 (2.6)	
Total		98.7 (23.6)	
April	Aster (<i>Aster</i> spp.)	19.9 (6.0)	31 of 64 (48.4%)
	Trumpet Creeper (<i>Campsis radicans</i>)	13.1 (4.2)	
	Buckvine (<i>Ampelopsis arborea</i>)	7.2 (4.2)	
	Dewberry (<i>Rubus</i> spp.)	7.2 (6.7)	
	Swamp Dogwood (<i>Cornus drummondii</i>)	6.4 (1.8)	
	Total	53.8 (22.9)	
	May	Trumpet Creeper (<i>Campsis radicans</i>)	
Aster (<i>Aster</i> spp.)		16.6 (7.5)	
Poison Ivy (<i>Rhus radicans</i>)		9.1 (8.5)	
Buckvine (<i>Ampelopsis arborea</i>)		7.5 (5.4)	
Dewberry (<i>Rubus</i> spp.)		5.7 (5.9)	
Total		58.4 (33.1)	
June	Aster (<i>Aster</i> spp.)	21.8 (6.3)	32 of 83 (38.6%)

Month	Plants	% of Browse Eaten (% of Browse Available)	No. of plant species or groups utilized by deer of those species or groups available
	Trumper Creeper (<i>Campsis radicans</i>)	18.1 (4.4)	
	Dewberry (<i>Rubus</i> spp.)	9.1 (5.8)	
	Poison Ivy (<i>Rhus radicans</i>)	8.2 (8.7)	
	Milkweed (<i>Asclepias perennis</i>)	4.2 (0.2)	
		Total <u>61.4 (25.4)</u>	
July	Trumpet Creeper (<i>Campsis radicans</i>)	26.9 (7.2)	41 of 92 (44.6%)
	Aster (<i>Aster</i> spp.)	17.8 (5.5)	
	Dewberry (<i>Rubus</i> spp.)	13.0 (6.2)	
	Grape (<i>Vitis</i> spp.)	6.9 (1.6)	
	Poison Ivy (<i>Rhus radicans</i>)	5.0 (8.1)	
		Total <u>69.6 (28.6)</u>	
Aug.	Trumpet Creeper (<i>Campsis radicans</i>)	30.2 (5.6)	30 of 100 (30.0%)
	Aster (<i>Aster</i> spp.)	30.1 (6.8)	
	Dewberry (<i>Rubus</i> spp.)	7.0 (8.5)	
	Poison Ivy (<i>Rhus radicans</i>)	4.9 (9.0)	
	Begger's Lice (<i>Desmodium</i> spp.)	4.6 (0.7)	
		Total <u>76.8 (30.6)</u>	
Sept.	Trumpet Creeper (<i>Campsis radicans</i>)	40.4 (6.7)	36 of 96 (37.5%)
	Aster (<i>Aster</i> spp.)	21.4 (7.8)	
	Dewberry (<i>Rubus</i> spp.)	12.7 (11.3)	
	Poison Ivy (<i>Rhus radicans</i>)	3.7 (6.2)	
	Greenbrier (<i>Smilax</i> spp.)	2.3 (3.2)	
		Total <u>80.5 (35.2)</u>	
Oct.	Trumpet Creeper (<i>Campsis radicans</i>)	42.1 (8.8)	34 of 93 (36.5%)
	Aster (<i>Aster</i> spp.)	22.4 (9.2)	
	Dewberry (<i>Rubus</i> spp.)	18.0 (13.5)	
	Poison Ivy	3.6 (5.5)	

Month	Plants	% of Browse Eaten (% of Browse Available)	No. of plant species or groups utilized by deer of those species or groups available
	(<i>Rhus radicans</i>) Swamp Dogwood	1.8 (1.1)	
	(<i>Cornus drummondii</i>)	Total 87.9 (38.1)	
Nov.	Dewberry (<i>Rubus</i> spp.)	43.3 (18.9)	26 of 77 (33.8%)
	Aster (<i>Aster</i> spp.)	28.3 (12.1)	
	Trumpet Creeper (<i>Campsis radicans</i>)	14.5 (4.1)	
	Swamp Dogwood (<i>Cornus drummondii</i>)	3.4 (1.3)	
	Rattan (<i>Berchemia scandens</i>)	1.7 (2.5)	
	Total	91.2 (38.9)	
Dec.	Dewberry (<i>Rubus</i> spp.)	62.9 (26.7)	13 of 56 (23.2%)
	Aster (<i>Aster</i> spp.)	28.4 (17.7)	
	Trumpet Creeper (<i>Campsis radicans</i>)	2.5 (0.9)	
	Swamp Dogwood (<i>Cornus drummondii</i>)	2.4 (1.2)	
	Rattan (<i>Berchemia scandens</i>)	1.8 (3.2)	
	Total	98.0 (49.7)	
Jan.	Dewberry (<i>Rubus</i> spp.)	95.4 (30.6)	8 of 37 (21.6%)
	Grass (Poaceae)	3.4 (3.1)	
	Vetch (<i>Vicia</i> spp)	.4 (8.0)	
	Oaks (<i>Quercus</i> spp.)	.2 (1.0)	
	Rattan (<i>Berchemia scandens</i>)	.2 (1.5)	
	Total	99.6 (44.2)	

Table 2. The Five Most Important Deer Browse Plants by Season on Durango Hunting Club, Tensas Parish, Louisiana, February 1971 - January 1972.

Season	Plants	% of Browse Eaten (% of Browse Available)	No. of plant species or groups utilized by deer of those species or groups available
Spring (March, April, May)	Dewberry (<i>Rubus</i> spp.)	23.3 (7.6)	42 of 84 (50.0%)
	Aster (<i>Aster</i> spp.)	14.8 (7.4)	
	Trumpet Creeper (<i>Campsis radicans</i>)	13.2 (4.0)	
	Poison Ivy (<i>Rhus radicans</i>)	5.7 (7.5)	
	Swamp dogwood (<i>Cornus drummondii</i>)	<u>3.7 (2.0)</u>	
	Total	60.7 (28.5)	
Summer (June, July, Aug.)	Trumpet Creeper (<i>Campsis radicans</i>)	25.1 (5.7)	54 of 117 (46.2%)
	Aster (<i>Aster</i> spp.)	23.3 (6.2)	
	Dewberry (<i>Rubus</i> spp.)	9.7 (6.8)	
	Poison Ivy (<i>Rhus radicans</i>)	6.0 (8.6)	
	Grape (<i>Vicia</i> spp.)	<u>3.7 (1.7)</u>	
	Total	67.8 (29.0)	
Fall (Sept., Oct., Nov.)	Trumpet Creeper (<i>Campsis radicans</i>)	32.3 (6.5)	51 of 112 (45.5%)
	Dewberry (<i>Rubus</i> spp.)	24.6 (14.6)	
	Aster (<i>Aster</i> spp.)	24.0 (9.7)	
	Poison Ivy (<i>Rhus radicans</i>)	2.8 (5.8)	
	Swamp Dogwood (<i>Cornus drummondii</i>)	<u>2.2 (1.2)</u>	
	Total	85.9 (37.8)	
Winter (Dec., Jan., Feb.)	Dewberry (<i>Rubus</i> spp.)	83.3 (30.3)	23 of 63 (36.5%)
	Aster (<i>Aster</i> spp.)	9.8 (16.7)	
	Grass (Poaceae)	1.2 (4.0)	
	Swamp Dogwood (<i>Cornus drummondii</i>)	.9 (0.7)	
	Vetch (<i>Vicia</i> spp.)	<u>.9 (8.0)</u>	
	Total	96.1 (59.7)	

Summer was the season with the largest number of species and groups. A total of 117 species and groups was identified in summer and of this number, 53 (45.3%) were utilized by deer. The smallest number of plants (67) occurred in winter and 23 (34.3%) of the available plants were utilized by deer. The mean number of plant species and groups by season was 92 while the mean number of plants utilized was 42 (45.6%) (See Table 2).

Plant species and groups were analyzed by month and the top five species and groups were ranked according to percent of browse eaten (Table 1) and percent of browse available (Table 4). The percent of browse available and the percent of browse eaten are relative percentages; that is, a percentage value for a given species or species group is based on all other species and species groups present during the particular period of time for which data were analyzed, whether it be by month, season or year.

Dewberry was the most important deer browse plant for the months of January, February, March, November, and December. Dewberry was also important during the remaining months. It ranked fourth in April, fifth in May, and third in June, July, August, September, and October. Figure 1 shows the monthly availability, density, and utilization of dewberry. In Figure 1, the graphic illustration indicates that the availability of dewberry declined, especially during the warm months (March - August). However, the density aspect reveals that dewberry is relatively abundant to the same extent during each month of the year. The reason for this reduction in availability is the increase in numbers of species during the warm months which tends to lower its availability percentages. The same can be said about the reduction in usage during this same period. The reason for this reduced usage is the increased availability of other preferred deer browse plants, plus a significant reduction in the amount of dewberry actually eaten during the spring and summer months. This factor of increased availability of plants would also tend to affect other species in a similar manner.

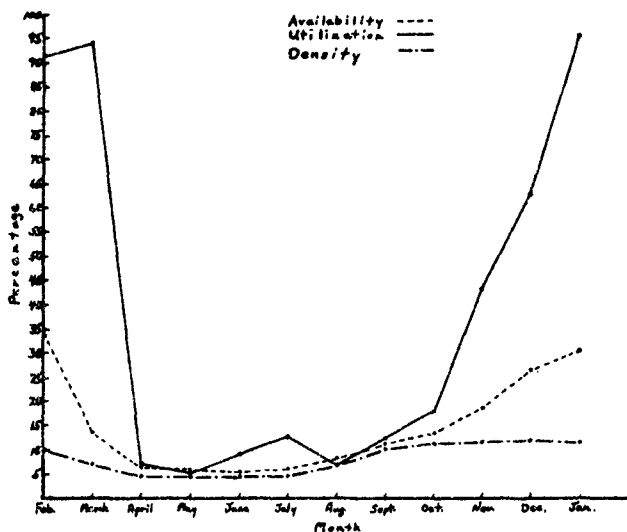


Figure 1. Monthly availability and utilization of *Rubus* spp., No. 1 deer browse plant on Durango Hunting Club, February 1971 - January 1972.

Aster was the most important deer browse plant for April and June. It was also among the top five species and groups for the remaining months. Aster ranked fifth in February and second in May, July, August, September, October, November and December. Apparently the low percent value for aster in February (See Figure 2) occurred because of its growth habit during mid-winter. The mid-winter growth habitat of aster is that of a basal rosette. Two possible reasons for deer not browsing aster as a basal rosette are, the possible low nutritive content of the plant in this season and its low growth habit which makes it difficult for deer to obtain.

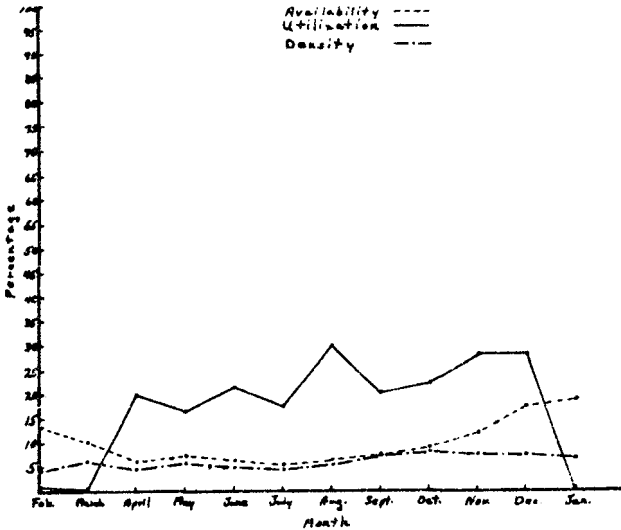


Figure 2. Monthly availability and utilization of *Astor* spp., No. 2 deer browse plant on Durango Hunting Club, February 1971 - January, 1972.

Trumpet creeper (*Campsis radicans*) ranked number one in May, July, August, September, and October. It ranked second in April and May and third in November and December. Trumpet creeper was not available during January, February and March. Figure 3 graphically relates the comparison between monthly availability, density and utilization of trumpet creeper.

While poison ivy (*Rhus radicans*) did not occur as a number one deer browse plant during any of the 12 months, it did rank among the top five plants in six of the months. It ranked third in May, fourth in June, August, September and October, and fifth in July (See Table 1 and Figure 4).

The most abundant plants based on monthly analysis were dewberry and poison ivy. Dewberry ranked first in January, February, March, September, October, November, and December. Poison ivy ranked first in April, May, June, July and August. Dewberry was third in abundance for April and August, fifth for June and fourth for July, while poison ivy was in the top five in only one additional month (November). Poison ivy was third in November (See Table 4).

The most important plants to deer on a seasonal basis (Table 2) were dewberry and trumpet creeper. Dewberry was the top deer browse plant in spring and winter, and trumpet creeper was the most important deer browse plant in summer and fall. Dewberry ranked third in summer and second in fall while

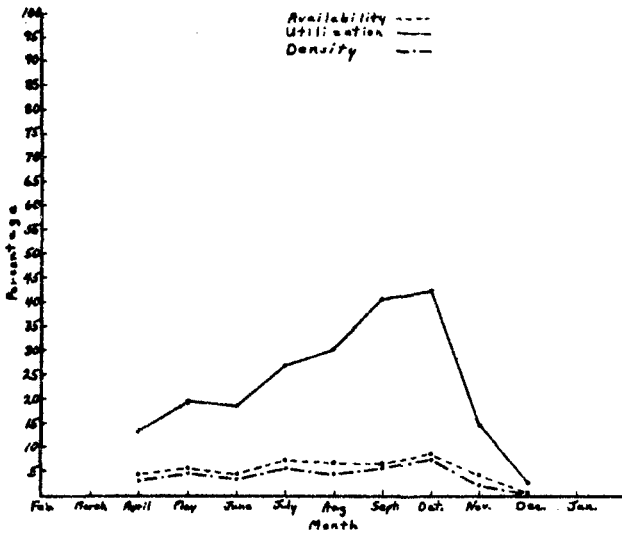


Figure 3. Monthly availability and utilization of *Campsis radicans*, No. 3 deer browse plant on Durango Hunting Club, Feb. 1971 - Jan. 1972.

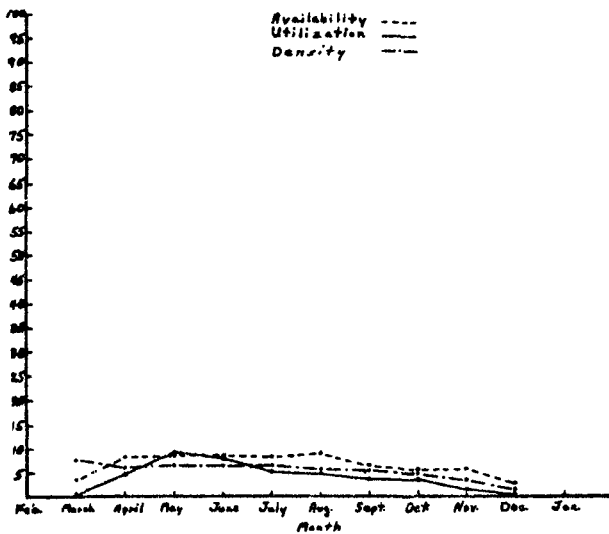


Figure 4. Monthly availability and utilization of *Rhus radicans*, No. 4 deer browse plant on Durango Hunting Club, Feb. 1971 - Jan. 1972.

trumpet creeper ranked third in the spring. Trumpet creeper was not available in the winter.

The most abundant plants for the four seasons were dewberry and poison ivy. Dewberry was the most abundant species for spring, fall and winter. Poison ivy was the most abundant species in summer. Poison ivy was third in spring but did not occur among the top five in either fall or winter.

When data for the 12 months are combined and analyzed, dewberry represents the most important deer browse plant (Table 3), and it was also the most abundant plant (Table 6).

For each month and season, and for the entire year as a whole, there were plant species and groups that were abundant but received little or no use by deer (See Tables 4, 5 and 6).

Of the top ten most important deer browse plants for the entire year (Table 3), only two (dewberry and aster) were available to a measurable extent during each of the 12 months of the year studied. These same two plants are both the most important deer browse plants (Table 3) and the most abundant plants (Table 6). In both cases dewberry ranks first and aster second. The remaining eight important deer browse plants were all available for a nine-month period.

Not only are understory browse plants utilized for food by deer, but mast, when available, is heavily used by deer. Sweet pecan is the primary mast on the study area. During the 1971-72 deer season, the rumen contents of 32 deer (doe and buck) were examined to determine if mast (in particular sweet pecan) was being eaten. It was found that of the 32 deer rumens examined, 18 (56.2%) contained sweet pecans. Obviously, sweet pecans were of significant importance in the diet of deer during the fall and winter months (particularly the winter months). If pecans had not been available, the percent of browse eaten for dewberry in the winter may have been much higher.

In addition to native browse plants and sweet pecan mast, cultivated soybeans are extensively eaten by deer on the area. The foliage of soybeans is heavily utilized in early June when they first sprout. Damage is moderate on foliage up until September and October when beans mature, and at this time deer utilization becomes concentrated on mature beans. Soybeans provide a rich source of food for deer from the time they sprout until the crop is harvested and the resulting waste disked under.

Table 3. The Ten Most Important Deer Browse Plants for the Year (February 1971 - January 1972) on Durango Hunting Club, Tensas Parish, Louisiana.

Plants'	% of Browse Eaten (% of Browse Available)	No. of plant species or groups utilized by deer of those species or groups available
Dewberry (<i>Rubus</i> spp.)	35.8 (15.2)	81 of 141 (57.4%)
Aster (<i>Aster</i> spp.)	18.1 (10.1)	
Trumpet Creeper (<i>Campsis radicans</i>)	18.1 (4.1)	
Poison Ivy (<i>Rhus radicans</i>)	3.5 (5.6)	
Swamp Dogwood (<i>Cornus drummondii</i>)	2.3 (1.3)	

Plants	% of Browse Eaten (% of Browse Available)	No. of plant species or groups utilized by deer of those species or groups available
Buckvine (<i>Ampelopsis arborea</i>)	2.1 (3.4)	
Grape (<i>Vitis</i> spp.)	1.7 (1.0)	
Rattan (<i>Berchemia scandens</i>)	1.2 (2.0)	
Hackberry (<i>Celtis laevigata</i>)	1.1 (4.5)	
Greenbrier (<i>Smilax</i> spp.)	<u>1.1 (3.5)</u>	
	Total 85.0 (50.7)	

Table 4. The Five Most Abundant Plants by Month on Durango Hunting Club, Tensas Parish, Louisiana, February 1971 - January 1972.

Month	Plants	% of Browse Available (% of Browse Eaten)	No. of plant species or Groups Available
Feb.	Dewberry (<i>Rubus</i> spp.)	33.5 (91.6)	32
	Aster (<i>Aster</i> spp.)	13.4 (0.9)	
	Vetch (<i>Vicia</i> spp.)	10.2 (2.0)	
	Grass (<i>Poaceae</i>)	5.2 (less than .051)	
	Sedge (Cyperaceae)	<u>5.1 (1.7)</u>	
		Total 67.4 (96.2)	
March	Dewberry (<i>Rubus</i> spp.)	13.2 (94.1)	43
	Vetch (<i>Vicia</i> spp.)	11.3 (0.0)	
	Aster (<i>Aster</i> spp.)	10.2 (0.1)	
	Sedge (Cyperaceae)	5.2 (0.7)	
	Violet (<i>Viola affinis</i>)	<u>5.0 (0.0)</u>	
		Total 44.9 (94.9)	
April	Poison Ivy (<i>Rhus radicans</i>)	8.3 (4.9)	64
	Hackberry (<i>Celtis laevigata</i>)	6.8 (2.4)	
	Dewberry (<i>Rubus</i> spp.)	6.7 (7.2)	

Month	Plants	% of Browse Available (% of Browse Eaten)	No. of plant species or Groups Available
	Aster (<i>Aster</i> spp.)	6.0 (20.0)	
	Wild Chervil (<i>Chaerophyllum tainurieri</i>)	5.1 (3.9)	
	Total	32.9 (38.4)	
May	Poison Ivy (<i>Rhus radicans</i>)	8.5 (9.1)	77
	Aster (<i>Aster</i> spp.)	7.5 (16.6)	
	Hackberry (<i>Celtis laevigata</i>)	6.6 (5.0)	
	Trumpet Creeper (<i>Campsis radicans</i>)	5.8 (19.5)	
	Buckvine (<i>Ampelopsis arborea</i>)	5.4 (7.5)	
	Total	33.8 (57.7)	
June	Poison Ivy (<i>Rhus radicans</i>)	8.7 (8.2)	83
	Buckvine (<i>Ampelopsis arborea</i>)	6.5 (2.5)	
	Aster (<i>Aster</i> spp.)	6.3 (21.8)	
	Grass (Poaceae)	6.0 (0.0)	
	Dewberry (<i>Rubus</i> spp.)	5.8 (9.1)	
	Total	33.3 (41.6)	
July*	Poison Ivy (<i>Rhus radicans</i>)	8.1 (5.0)	92
	Grass (Poaceae)	7.5 (0.0)	
	Trumpet Creeper (<i>Campsis radicans</i>)	7.2 (26.9)	
	Dewberry (<i>Rubus</i> spp.)	6.2 (13.1)	
	Hackberry (<i>Celtis laevigata</i>)	6.0 (2.0)	
	Total	35.0 (47.0)	
Aug.	Poison Ivy (<i>Rhus radicans</i>)	9.0 (4.9)	100
	Grass (Poaceae)	8.7 (0.0)	
	Dewberry (<i>Rubus</i> spp.)	8.5 (7.0)	
	Aster (<i>Aster</i> spp.)	6.8 (30.1)	
	Hackberry (<i>Celtis laevigata</i>)	6.1 (0.4)	
	Total	39.1 (42.2)	

Month	Plants	% of Browse Available (% of Browse Eaten)	No. of plant species or Groups Available
Sept.	Dewberry (<i>Rubus</i> spp.)	11.3 (12.7)	96
	Grass (Poaceae)	8.5 (0.0)	
	Aster (<i>Aster</i> spp.)	7.8 (21.5)	
	Hackberry (<i>Celtis laevigata</i>)	7.0 (0.6)	
	Trumpet Creeper (<i>Campsis radicans</i>)	<u>6.7 (40.4)</u>	
	Total	41.3 (75.2)	
Oct.	Dewberry (<i>Rubus</i> spp.)	13.5 (18.0)	93
	Aster (<i>Aster</i> spp.)	9.2 (22.4)	
	Trumpet Creeper (<i>Campsis radicans</i>)	8.8 (42.1)	
	Grass (Poaceae)	7.4 (0.0)	
	Hackberry (<i>Celtis laevigata</i>)	<u>6.0 (0.9)</u>	
	Total	44.9 (83.4)	
Nov.	Dewberry (<i>Rubus</i> spp.)	18.9 (43.3)	77
	Aster (<i>Aster</i> spp.)	12.1 (28.3)	
	Poison Ivy (<i>Rhus radicans</i>)	5.9 (1.3)	
	Grass (Poaceae)	5.3 (0.4)	
	Hackberry (<i>Celtis laevigata</i>)	<u>4.9 (0.5)</u>	
	Total	47.1 (73.8)	
Dec.	Dewberry (<i>Rubus</i> spp.)	26.7 (63.0)	56
	Aster (<i>Aster</i> spp.)	17.7 (28.4)	
	Vetch (<i>Vicia</i> spp.)	5.8 (0.4)	
	Grass (Poaceae)	3.8 (0.1)	
	Sedge (Cyperaceae)	<u>3.2 (0.0)</u>	
	Total	57.2 (91.9)	
Jan.	Dewberry (<i>Rubus</i> spp.)	30.6 (95.4)	37
	Aster (<i>Aster</i> spp.)	19.0 (0.1)	

Month	Plants	% of Browse Available (% of Browse Eaten)	No. of plant species or Groups Available
	Vetch (<i>Vicia</i> spp.)	8.0 (0.4)	
	Sedge (Cyperaceae)	4.5 (0.0)	
	Violet (<i>Viola affinis</i>)	<u>4.0 (0.0)</u>	
	Total	66.1 (95.9)	

*Aster ranked seventh in July with a % of browse available of 5.5; % of browse eaten was 17.8.

Table 5. The Five Most Abundant Plants by Season on Durango Hunting Club, Tensas Parish, Louisiana, February 1971 - January 1972.

Season	Plants	% of Browse Available (% of Browse Eaten)	No. of Plant Species or Groups Available
Spring (March, April, May)	Dewberry (<i>Rubus</i> spp.)	7.6 (23.3)	84
	Poison Ivy (<i>Rhus radicans</i>)	7.5 (5.7)	
	Aster (<i>Aster</i> spp.)	7.4 (14.8)	
	Hackberry (<i>Celtis laevigata</i>)	5.9 (3.0)	
	Grass (Poaceae)	<u>4.4 (0.0)</u>	
	Total	32.8 (46.8)	
Summer (June, July, Aug.)	Poison Ivy (<i>Rhus radicans</i>)	8.6 (6.0)	117
	Grass (Poaceae)	7.4 (0.0)	
	Dewberry (<i>Rubus</i> spp.)	6.8 (9.7)	
	Aster (<i>Aster</i> spp.)	6.2 (23.3)	
	Buckvine (<i>Ampelopsis arborea</i>)	<u>5.9 (2.3)</u>	
	Total	34.9 (41.3)	
Fall (Sept., Oct., Nov.)	Dewberry (<i>Rubus</i> spp.)	14.6 (24.7)	112
	Aster (<i>Aster</i> spp.)	9.7 (24.0)	
	Grass (Poaceae)	7.1 (0.1)	

Season	Plants	% of Browse Available (% of Browse Eaten)	No. of Plant Species or Groups Available
	Trumpet Creeper (<i>Campsis radicans</i>)	6.5 (32.3)	
	Hackberry (<i>Celtis laevigata</i>)	6.0 (0.7)	
	Total	43.9 (81.8)	
Winter (Dec., Jan., Feb.)	Dewberry (<i>Rubus</i> spp.)	30.3 (83.3)	63
	Aster (<i>Aster</i> spp.)	16.7 (9.8)	
	Vetch (<i>Vicia</i> spp.)	8.0 (0.9)	
	Sedge (Cyperaceae)	4.3 (0.6)	
	Grass (Poaceae)	4.0 (1.2)	
	Total	63.3 (95.8)	

Table 6. The Ten Most Abundant Plants for the Year (February 1971 - January 1972) on Durango Hunting Club, Tensas Parish, Louisiana.

Plants	% of Browse Available (% of Browse Eaten)	No. of Plant Species or Groups Available
Dewberry (<i>Rubus</i> spp.)	15.1 (35.8)	141
Aster (<i>Aster</i> spp.)	10.1 (18.1)	
Grass (Poaceae)	5.8 (0.3)	
Poison Ivy (<i>Rhus radicans</i>)	5.6 (3.5)	
Hackberry (<i>Celtis laevigata</i>)	4.5 (1.1)	
Trumpet Creeper (<i>Campsis radicans</i>)	4.1 (18.1)	
Greenbrier (<i>Smilax</i> spp.)	3.5 (1.1)	
Vetch (<i>Vicia</i> spp.)	3.4 (0.3)	
Buckvine (<i>Ampelopsis arborea</i>)	3.4 (2.1)	
Sedge (Cyperaceae)	2.8 (0.3)	
Total	58.3 (80.7)	

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VARIATIONS IN FAT LEVELS OF MANDIBULAR CAVITY TISSUE IN WHITE-TAIL DEER (*Odocoileus virginianus*) IN TENNESSEE¹

Robert G. Nichols, *Research Biologist, Tennessee Game and Fish Commission, Rutledge*

and

Michael R. Pelton, *Assistant Professor, Department of Forestry, The University of Tennessee, Knoxville*

ABSTRACT

Age, sex, and date of collection were found to affect fat levels of mandibular cavity tissue (MCT). Percent MCT fat increased from the fawn age class up to and including the 3½ age class. Percent MCT fat remained relatively stable in all age classes above 3½ years. Females were found to have a percent MCT fat that was higher than the percent MCT fat of males. Fat in the tissue of the mandibular cavity increased during the months of October, November, and early December, and decreased in late December and early January.

Mean MCT fat levels of whitetail deer on four wildlife management areas (WMA) were found to be closely grouped and high. The deer herd on the Natchez Trace WMA had a MCT fat level that was lower than the MCT fat levels of the other areas.

¹This study was supported by funds provided from McIntire-Stennis Project No. 11 of the Department of Forestry and Agricultural Experiment Station, The University of Tennessee. Field collections of deer mandibles and other data were made possible through the efforts of Mr. Clifton Whitehead, Supervisor of Game Management Research, Tennessee Game and Fish Commission and other game and fish field personnel.