

STATUS OF THE SPOTTED SKUNK, COMMON SKUNK AND WOODCHUCK IN TENNESSEE

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This paper deals with the current status of the skunk and woodchuck in Tennessee, especially their distribution and density. Information is presented on the Alleghenian spotted skunk, *Spilogale putorius* (Linnaeus), common skunk, *Mephitis mephitis* (Schreber) and woodchuck, *Marmota monax* (Linnaeus). Similarity in the distribution of the latter two species makes it advisable to discuss both in the same paper.

Current literature on the distribution of Tennessee mammals, primarily that of Hamilton (1943) and Burt and Grossenheider (1952), relies chiefly upon the reports of Rhoads (1896) and Kellogg (1939). Rhoads presents little specific information regarding the distribution of the spotted skunk and woodchuck, but he does record the skunk as occurring rarely in the Mississippi lowlands and has observed a woodchuck den on the bluff adjacent to Reelfoot Lake. Rhoads does not discuss the spotted skunk. Kellogg's report (1939) contains the most complete information regarding the mammals of Tennessee. His data on these three species are scanty, but he does make some statements of interest. He records the eastern skunk, *Mephitis mephitis nigra* (Peale and Beauvois), west of the southern Allegheny Mountains. In regard to the Florida skunk, *Mephitis mephitis elongata* (Bangs), he refers only to Komarek and Komarek (1938) who reported this subspecies in the Great Smoky Mountains. His information on the Alleghenian spotted skunk is restricted to one specimen collected in Campbell County and one specimen collected in Sullivan County and reports of its presence in the Great Smoky Mountains and Anderson County. Kellogg reports a few woodchucks on the Mississippi River bluffs. He further states that "they were not common in any of the western counties drained by the small tributaries of the river." He believes that the animal is most abundant in eastern Tennessee.

Since neither Rhoads nor Kellogg present distribution maps, it is necessary that we rely upon maps and conclusions of Hamilton (1943) and Burt and Grossenheider (1952) for the latest material available. Hamilton shows the range of the eastern skunk as all of West and Central Tennessee with the eastern edge demarcated by a line from the junction of Kentucky, Tennessee and Virginia to the extreme southeastern corner of Tennessee. He indicates the Florida skunk as occurring in the northeastern corner of the state with a zone of intergradation with the eastern skunk occurring in the area between these two regions. The distribution of the Alleghenian spotted skunk is shown as east of a line from approximately Pickett County to the

southeastern corner of McNairy County. The central and northern portions of the western distribution of the spotted skunk are slightly west of the distribution presented by Howell (1906). Apparently, Howell has attempted to omit the Central Basin from the range of the species. Hamilton (1943) includes all the state except Shelby, Tipton and Fayette Counties and portions of adjoining counties in the woodchuck range, while Howell (1915) shows the western edge of the range as being in the vicinity of the West Tennessee River. Burt and Grossenheider (1952), who do not present information on subspecies, show the common and spotted skunk as being present in all of Tennessee, and the woodchuck in all of the state except west of a line from Reelfoot Lake to the southeastern corner of McNairy County.

Lack of specific information concerning the distribution of the

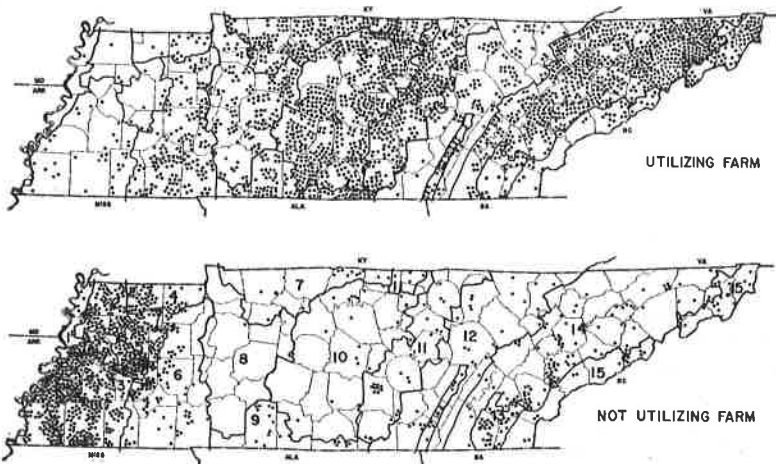


Fig. 1. Distribution of heads of farm households reporting the common skunk either utilizing or not utilizing their farms.

native fauna of Tennessee stimulated the Tennessee Game and Fish Commission into conducting a statewide wildlife survey. Primary field work for this project was begun in September, 1950, and was completed approximately thirteen months later. The survey procedure (Schultz, 1952) included a method of sampling known as "area sampling" which permitted computation of sampling errors (Table 1). In brief, the method consisted of a random selection of 1000 "sampling areas" in Tennessee which averaged five indicated dwellings per area (Schultz *et al.*, 1954). Farmers dwelling upon these areas were interviewed concerning wild animals utilizing their farms and the "sampling areas." Data collected on the common skunk and woodchuck are presented in this report (Tables 1, 2, and Figures 1, 2) and Schultz *et al.* (1954). Sampling errors indicate the adequacy of sampling for all interviewees and all respondents reporting various animals on their farms. The latter are an indication

of the relative density and dispersion of the animal within the farming-type, i.e., the smaller the sampling error, the greater the possible dispersion and relative density of the animal in the farming-type. As no attempt was made during interviewing to obtain information on the spotted skunk, it is quite possible that this animal was reported as "skunk" in some areas. Farmer hunters were requested to furnish information on animals hunted, with the intent that such information would assist in delineation of the range of game species. Because of general scarcity of common skunk west of Kentucky Lake and the paucity of information on the distribution of the Alleghenian spotted skunk, a list of the 1949-50 and 1950-51 fur purchases of Sears, Roebuck and Company was obtained in an attempt to secure additional information.

A questionnaire was sent to conservation officers requesting

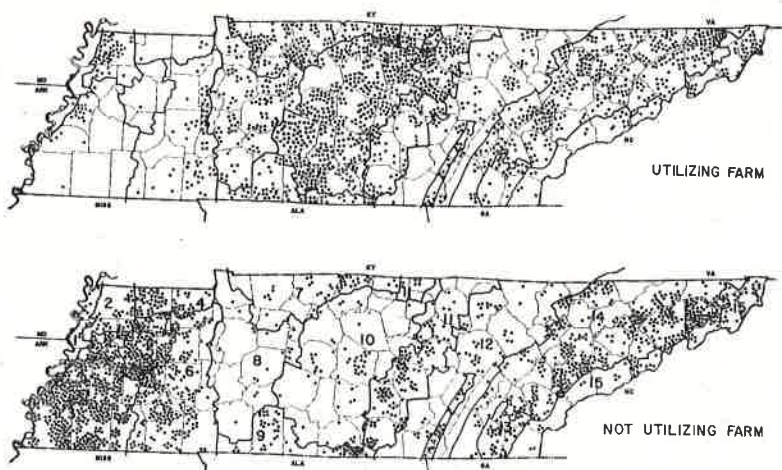


Fig. 2. Distribution of heads of farm households reporting the woodchuck either utilizing or not utilizing their farms.

information on the status of the spotted skunk, common skunk and woodchuck in their assigned county. Officers were requested to indicate these animals as being common, rare, or absent in their counties. An additional request for specific localities of occurrence was sent to those officers who listed any of these animals as rare. In general, the officers' reports agree with those obtained by personal interviews. Use of the relative terms, *common*, *rare* and *absent*, is hazardous as the terms may connote different meanings to different officers. The officers may not have been able to differentiate between the common and spotted skunk.

Although data collected do not permit delineation of ranges of subspecies, they do establish the present range of the common skunk, woodchuck, and, possibly, the spotted skunk in Tennessee. Data obtained by personal interview have been tabulated on a farming-type basis (Tables 1, 2, and Figures 1, 2). The farming types (revised

from Luebke *et al.*, 1947) in Figures 1 and 2 represent physiographic regions as follows: Mississippi Bottoms, 1; Plateau Slope of West Tennessee, 2, 3, 4, 5, 6; Highland Rim, 7, 8, 9, 11; Central Basin, 10; Cumberland Plateau, 12; Valley of East Tennessee, 13, 14; Sequatchie Valley, 14A; Unaka Range, 15.

Spotted Skunk. This report contains little data on the distribution of the spotted skunk in Tennessee. As former respondents were not requested to furnish information on the spotted skunk, or "civet," as it is known locally, it was necessary that tentative distribution of the species be based on miscellaneous sources of information. Sears, Roebuck and Company records disclosed only 33 spotted skunk pelts purchased from Tennessee trappers during the two trapping seasons, 1949-50 and 1950-51. Purchases were from 17 trappers in the following counties: Blount, 1; Campbell, 1; Carter, 1; Claiborne, 3; Cumberland, 1; Lawrence, 1; Marion, 4; Monroe, 1; Polk, 12; Sequatchie, 5; Unicoi, 1; Washington, 1, and White, 1 pelt. It appears from these data that the primary range of the spotted skunk in Tennessee is restricted to the Cumberland Plateau and Unaka Range.

Conservation officers reported the spotted skunk as occurring in the following counties: Anderson, Bledsoe (Cumberland Plateau), Blount (localized), Bradley (White Oak Mt.), Campbell (unknown), Carroll, Carter (unknown), Cocke, Coffee, Cumberland, DeKalb (unknown), Fentress (eastern portion), Franklin, Giles, Greene (unknown), Hamilton (Walden Ridge), Hardin (hills adjacent to Pickwick Reservoir), Hawkins (entire county), Henderson (eastern half of county), Henry, Hickman (Bluebuck Creek), Houston (entire county), Jackson, Jefferson (vicinity of Douglas Reservoir), Johnson, Knox (Choto-Martel), Lewis, Loudon (Greenback), Marion (Battle Creek), McMinn (Chilhowie Mt.), Meigs, Monroe, Moore, Morgan (Catoosa Wildlife Management Area), Overton (localized), Polk, Putnam, Roane, Scott (Flat Ridge), Sequatchie, Sevier (Fair Garden), Smith (in hills), Stewart (entire county), Sullivan (entire county), Unicoi, Union (Love Mt.), VanBuren (Cumberland Plateau and Cane Creek Gulf), Warren (Cumberland Plateau), Washington (Nolichucky section), White (Scott's Gulf). In counties omitted from this list, conservation officers listed the spotted skunk as absent, and in counties not followed by parentheses they were listed as common. In counties where they were listed as rare, additional information as to the exact location was requested of all officers, and their reply is that enclosed in parentheses. In case the exact location in the county was not known, the term "unknown" is placed in parentheses after the county. This procedure is followed for similar tabulations for the common skunk.

Field men on the survey made a special attempt to obtain information on the spotted skunk from southern and northern portions of the western Highland Rim, and wilderness areas of the Unaka Range and Cumberland Plateau. They found that the animal was present throughout the Cumberland Plateau and Unaka Range

and occurred in Wayne and Stewart County in the western Highland Rim, being rare in Stewart and slightly more abundant in Wayne County. Reports of their presence were also obtained from Hardin County. These were the only counties included in this reconnaissance of the western Highland Rim.

The data from these three sources apparently delineate the range of the spotted skunk as all of Tennessee east of the eastern Highland Rim, the southern and western Highland Rim and slightly westward of the West Tennessee River, with the primary range being the Cumberland Plateau and Unaka Range. It is difficult to draw accurate conclusions concerning population densities because of the animal's habits, habitat preferences, and lack of data, but the density does not appear to equal that of the common skunk in Tennessee.

Common Skunk. The primary range of the common skunk is from the North Carolina line westward to the western edge of Henry, Carroll, Henderson, Chester and McNairy County. More specifically, this western edge appears to coincide with the western edge of farming-type 6, extending northward to Kentucky. There appear to be some individuals west of this line, but, except in the immediate vicinity of this boundary, the common skunk can be considered rare in this region. The distribution of the 3560 respondents, 2432 of which reported the common skunk on their farms and 1128 who reported the animal not on their farms, is presented in Figure 1. The distribution as shown leaves little doubt that the skunk's range is as delineated above. Insufficient data are available from the southern portion of the Unaka Range to make a definite statement concerning this region; however, it is to be noticed that the two farmers reporting no skunk on their farms in Polk County are from the Copper Hill mining section which sustains poor animal populations. There appears to be a low population in the southeastern portion of the East Tennessee Valley such as is also to be reported for woodchuck. The percentage of respondents reporting the common skunk on their farms is an indication of the relative abundance of the animal throughout the state (Table 1). The lowest percentages occur in farming-types west of farming-type 6. The lowest percentage in the remaining region is from the previously mentioned region in southeastern Tennessee. The highest percentages in the state are from Central Tennessee, including the Central Basin and Highland Rim. The Cumberland Plateau and Unaka Range apparently have a common skunk population lower than that in the East Tennessee Valley. Data collected on the presence of the common skunk on the "sampling area" have a pattern similar to those for reports of skunk on the farm (Table 2). In addition to these data, the distribution of farmer skunk-hunters substantiates the hypothesis that the primary range lies east of the western boundary of farming-type 6. Of the 1042 farmer-hunters interviewed, 41 (or four per cent) hunted skunk. Of these, only two were contacted west of the West Tennessee River and these were in farming-type 6. The largest percentages of

TABLE 1. Status of the common skunk and woodchuck on farms as determined by personal interview of heads of farm households

| | FARMING TYPE | | | | | | | | | | | | | | | TOTAL |
|--|--------------|------|------|------|-------|------|-----|-----|------|-----|-----|------|------|-----|------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| Number of respondents..... | 27 | 97 | 489 | 69 | 131 | 261 | 200 | 139 | 116 | 538 | 306 | 137 | 57 | 862 | 131 | 3560 |
| Relative sampling error ¹ | 16.4 | 7.6 | 5.0 | 6.7 | 6.8 | 4.6 | 5.9 | 6.7 | 8.8 | 3.2 | 5.7 | 7.7 | 10.2 | 3.0 | 6.6 | 1.5 |
| Number reporting skunk on farm..... | 1 | 3 | 34 | 16 | 8 | 164 | 186 | 138 | 98 | 518 | 274 | 108 | 26 | 759 | 99 | 2432 |
| Per cent reporting skunk on farm..... | 4 | 3 | 7 | 23 | 6 | 63 | 93 | 99 | 84 | 96 | 90 | 79 | 46 | 88 | 76 | 68 |
| Relative sampling error..... | 107.0 | 53.4 | 18.8 | 18.8 | 34.3 | 7.3 | 6.3 | 6.6 | 7.8 | 3.4 | 5.3 | 11.7 | 23.9 | 3.2 | 8.2 | 1.8 |
| Number reporting woodchuck on farm..... | 2 | 43 | 22 | 4 | 1 | 56 | 154 | 118 | 63 | 480 | 176 | 76 | 21 | 426 | 61 | 1703 |
| Per cent reporting woodchuck on farm..... | 7 | 44 | 4 | 6 | 1 | 21 | 77 | 85 | 54 | 89 | 58 | 55 | 37 | 49 | 47 | 48 |
| Relative sampling error..... | 95.8 | 24.0 | 22.6 | 59.3 | 104.8 | 15.6 | 7.2 | 8.3 | 12.2 | 3.8 | 8.6 | 13.0 | 23.0 | 5.5 | 15.1 | 2.5 |

¹Computed by use of analysis of variance, with computations by the Iowa State College Statistical Laboratory.

TABLE 2. Status of the common skunk and woodchuck on sampling areas as determined by personal interview of heads of farm households

| | FARMING TYPE | | | | | | | | | | | | | | | TOTAL |
|---|--------------|----|-----|----|----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| Number of respondents ¹ | 16 | 78 | 341 | 58 | 94 | 184 | 158 | 120 | 95 | 417 | 239 | 116 | 45 | 724 | 122 | 2807 |
| Number reporting skunk on sampling area | 1 | 3 | 32 | 19 | 7 | 144 | 155 | 119 | 86 | 416 | 230 | 109 | 27 | 682 | 110 | 2140 |
| Per cent reporting skunk on sampling area | 6 | 4 | 9 | 33 | 7 | 78 | 98 | 99 | 91 | 100 | 96 | 94 | 60 | 94 | 90 | 76 |
| Number reporting woodchuck on sampling area | 1 | 37 | 21 | 4 | 1 | 62 | 135 | 109 | 58 | 396 | 161 | 96 | 18 | 457 | 83 | 1639 |
| Per cent reporting woodchuck on sampling area | 6 | 47 | 6 | 7 | 1 | 34 | 85 | 91 | 61 | 95 | 67 | 83 | 40 | 63 | 68 | 58 |

¹Includes only respondents who have lived on area, or not over 2 miles from area, during the last five years.

farmer-hunters hunting skunk were from Central Tennessee. Of the 211 farmer-trappers interviewed, three skunk trappers were in farming-type 6 and one on the eastern edge of farming-type 5. No skunk trappers were contacted in the remainder of West Tennessee. The larger percentages of farmer-trappers trapping skunk were from Central Tennessee.

As the common skunk is relatively abundant in Central and East Tennessee, only reports of conservation officers for counties of West Tennessee will be presented. They reported the animal in these counties as follows (the term "unknown" in parentheses refers to the fact that the exact location in the county was not known): Benton, Carroll, Chester (unknown), Decatur (unknown), Gibson (Milan Arsenal), Hardeman (unknown), Hardin, Haywood (Hatchie River bottoms), Henderson, Henry, Lake (unknown), McNairy, Madison (hills and bottoms), Shelby (along Mississippi River), Tipton (unknown), Weakley (unknown). When these reports are plotted on a map of Tennessee, it is seen that the range is delineated as previously discussed. Sears, Roebuck and Company's skunk pelt purchases in West Tennessee for the 1949-50 trapping season follow a similar pattern. During this period, only one pelt was purchased in Chester, Fayette, Gibson, Haywood, and Obion, while none was purchased in Crockett, Dyer, Henderson, Lake, Lauderdale, Shelby, Tipton, and Weakley County. The number of skunk pelts from the remaining counties was: Benton, 11; Carroll, 7; Decatur, 17; Hardeman, 2; Hardin, 14; Henry, 7; McNairy, 7; and, Madison, 3. Thus, of the total 3845 common skunk pelts purchased in Tennessee during the 1949-50 trapping season, only 73 (or 1.9 per cent) were obtained from the 21 counties of West Tennessee. Because of the proximity to Sears, Roebuck and Company in Memphis, it would appear that a larger portion of the catch from West Tennessee would be sold to this company than in Central and East Tennessee. In general, it is seen that these additional sources of information support some of the previously stated conclusions.

Woodchuck. The primary woodchuck range in Tennessee consists of the Mississippi bluffs and all the state lying east of the West Tennessee River. The distribution of the 3560 respondents, 1703 of whom reported the woodchuck on their farms and 1857 of whom reported the animal not on their farms, is presented in Figure 1. The range as delineated above appears to be clearly defined in Figure 1. Insufficient data are available from the southern portion of the Unaka Range to make a definite statement concerning this region. The percentage of respondents reporting the animal on their farms in the various farming-types is an indication of the relative abundance of the woodchuck throughout the state (Table 1). The lowest percentages occur in farming-types west of the West Tennessee River. It should be observed that the highest percentages in this region are the result of what might be termed a disjunct population on the Mississippi bluffs. The highest percentages in the state are from Central Tennessee and the Cumberland Plateau. Apparently, the high

percentage from the Cumberland Plateau is misleading when considering the area as a whole since the majority of the region is an uninhabited forested area which probably has an over-all low woodchuck population. Data collected on the presence of woodchucks on "sampling areas" have a pattern similar to those for reports of woodchucks on the farms (Table 2). In addition to these data, the distribution of farmer woodchuck-hunters also indicates that the primary population of woodchucks is on the Mississippi bluffs and east of the West Tennessee River. Of the 1042 farmer-hunters interviewed, 75 (or seven per cent) hunted woodchucks, with only four of these (three on the Mississippi bluffs and one adjacent to the West Tennessee River) in West Tennessee, and 58 of the 75 woodchuck hunters in Central Tennessee. In the Central Basin, woodchuck-hunters appear to be primarily centered in the northeastern corner. No woodchuck-hunters were located during sampling in farming-type 13, an area which apparently has a small woodchuck population inasmuch as only 37 per cent and 40 per cent of the farmer respondents reported the woodchuck on their farms and "sampling area," respectively. These were the smallest percentages for these categories east of the West Tennessee River.

It can be concluded that the densest woodchuck populations in Tennessee are in the Highland Rim and Central Basin with the lowest west of the West Tennessee River. Two disjunct areas of high and low population densities, the Mississippi bluffs and farming-type 13, respectively, appear to exist in the state. There is a similarity between the distribution of the common skunk and woodchuck in the state. Both species are rarest in West Tennessee and both apparently have a low disjunct population in farming-type 13. It is interesting to note that the skunk population extends slightly more westward than that of the woodchuck and it does not have a relatively high density in the "bluffs" as is apparently evident for the woodchuck.

It is apparent from data presented in this paper that unlimited opportunities exist for the study of the common skunk, spotted skunk and woodchuck in Tennessee. Taxonomic studies of these animals are needed as well as explanations for the general absence of the animals in West Tennessee. It is interesting to note that southwestern Tennessee, which contains the lowest populations of skunk and woodchuck in the state, is generally accepted as the best quail range in the state. Is it possible that these populations are interrelated?

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