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# STATUS OF THE RACCOON IN TENNESSEE

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The current popularity of Davy Crockett has been accompanied by an interest in his garb and home state of Tennessee. It is almost unbelievable that zoologists know so little about the raccoon in Tennessee, the animal which has become a symbol of the State through the use of the coonskin hat by this pioneer and a nationally known political figure.

Kellogg's report (1939) contains the most complete information to date on the mammals of Tennessee but includes little data of value on the raccoon. A few general statements are made concerning the occurrence in Tennessee of the Alabama raccoon *(Procyon lotor varius,* Nelson and Goldman), with the eastern raccoon *(Procyon lotor lotor,* Linnaeus) being omitted from the report. Hamilton (1943) shows the eastern raccoon as being present in the northeast corner of the State, roughly that area northeast of a line from the junction of Cocke and Greene counties to the junction of the Kentucky, Virginia and Tennessee state lines. The Alabama raccoon is shown as occurring in the remainder of the State. Apparently Hamilton bases these distributions on Nelson and Goldman (1930) and Kellogg (1939). In the most complete taxonomic study of the raccoons to date, Goldman (1950) states that the eastern raccoon is "probably" found in Tennessee and that the Alabama raccoon occurs in Tennessee. It is interesting to note that no Tennessee specimens of *Procyon lotor lotor* (Linnaeus) and only three Tennessee specimens of *Procyon lotor varius* (Nelson and Goldman) were inspected by this writer, the three specimens being from Arlington, Big Sandy and Clarksville which are in Shelby, Benton and Montgomery counties, respectively. Wing (1940), reporting on a game survey encompassing an area roughly between the Holston River and the Tennessee-Kentucky state line, remarked: "Raccoons are present but are not common." Howell and Conaway (1952) in a report primarily on the small mammals of the Cumberland Plateau remark that *Procyon lotor* is generally distributed on the Plateau. In a similar study (Conaway and Howell, 1953) they make the same statement in regard to the distribution of the raccoon in Carter and Johnson counties. Apparently these writers observed only one specimen and based their remark on observations of racoon sign and reports from residents in the two study regions. It should be recorded that there have been intra- and interstate transplantings of raccoon in Tennessee.

TABLE 1. *Status of the raccoon in Tennessee as determined by personal interview of heads of farm households.*

| | FARMING-TYPE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total |
| FARM: | | | | | | | | | | | | | | | | |
| Number of respondents | 27 | 97 | 489 | 69 | 131 | 261 | 200 | 139 | 116 | 538 | 306 | 137 | 57 | 862 | 131 | 3560 |
| Number reporting raccoon on farm | 12 | 42 | 194 | 29 | 28 | 134 | 69 | 90 | 32 | 265 | 144 | 52 | 7 | 93 | 22 | 1213 |
| Percent reporting raccoon on farm | 44 | 43 | 40 | 42 | 21 | 51 | 35 | 65 | 28 | 49 | 47 | 38 | 12 | 11 | 17 | 34 |
| R.S.E.[1] for estimated total of | | | | | | | | | | | | | | | | |
| All heads of farm households | 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 | 6.5 | 1.5 |
| Heads of farm households with raccoon on farm | 30.1 | 16.4 | 10.0 | 14.8 | 26.0 | 10.0 | 11.3 | 10.8 | 17.4 | 6.4 | 9.1 | 17.5 | 41.8 | 11.4 | 22.4 | 3.3 |
| SAMPLING AREA: | | | | | | | | | | | | | | | | |
| Number of respondents[2] | 16 | 78 | 341 | 58 | 94 | 184 | 158 | 120 | 95 | 417 | 239 | 116 | 45 | 724 | 122 | 2807 |
| Number reporting raccoon on sampling area | 12 | 47 | 181 | 30 | 27 | 151 | 82 | 93 | 34 | 292 | 165 | 82 | 11 | 147 | 62 | 1416 |
| Per cent reporting raccoon on sampling area | 75 | 60 | 53 | 52 | 29 | 82 | 52 | 78 | 36 | 70 | 69 | 71 | 24 | 20 | 51 | 50 |

[1]Relative sampling errors (R.S.E.) computed by use of analysis of variance, with computations by the Iowa State College Statistical Laboratory.

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

Lack of specific information concerning the distribution of the raccoon and other native fauna of Tennessee resulted in the Tennessee Game and Fish Commission 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; 1954) included a method of sampling known as "area sampling" which permitted computation of relative sampling errors (Table I). In brief, the sampling scheme consisted of a proportionate stratified random sample of 1,000 "sampling areas" in Tennessee which averaged five indicated dwellings per area. This is a sampling rate of approximately 1 in 51. Heads of farm households dwelling upon these areas were interviewed concern-

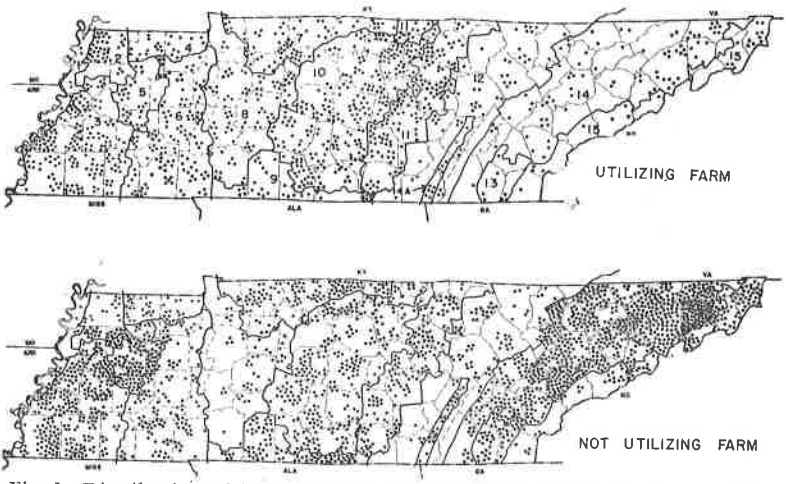


Fig. 1. Distribution of heads of farm households reporting the racoon either utilizing or not utilizing their farms.

ing wild animals utilizing their farms and the "sampling areas." Data collected on the raccoon are presented in this report and Schultz *et al.* (1954). The relative sampling errors (R.S.E.) indicate the adequacy of sampling for all interviewees and also all respondents reporting the raccoon utilizing their farms. Ninety-five per cent confidence limits on an estimated total (obtained by multiplying the number of respondents by the sampling rate) of either all heads of farms households or all such persons with the raccoon utilizing their farm are obtained for each farming-type as follows:

$$\pm \text{ (estimated total) (R.S.E.)} \quad (2)$$

Farmer hunters were requested to furnish information on animals hunted, with the intent that such information would

[2]Includes only respondents who have lived on area, or not over 2 miles from area, during the last [illegible]

assist in delineation of the range of game species and possibly population densities. As it was illegal to trap raccoon during the study period such information could not be utilized from trappers.

Although data collected do not permit delineation of ranges of subspecies, they do present some information on population density of the raccoon throughout Tennessee. Data obtained by personal interview have been tabulated on a farming-type basis (Table 1 and Figure 1). The farming-types (revised from Luebke *et al.*, 1947) or strata in Figure 1 represent physiographic regions as follows: Mississippi Bottom, 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.

The raccoon was reported as occurring on farms of 1,213 of the 3,560 respondents (Table 1). Their distribution is presented in Figure 1. The larger percentages of farmers reporting raccoon on their farms are in farming-types 6, 8, 10 and 11 with 51, 65, 49 and 47 per cent of the respondents reporting raccoon, respectively. A somewhat similar relationship existed in regard to reports of the animal on sampling areas (Table 1). There was a considerable reduction in the percentage of farmers reporting raccoon on the farm in all farming-types east of the Cumberland Pleateau. Apparently the land use practices in farming-types 13, 14 and 15 are not conducive to high raccoon populations. It is interesting to note that in farming-type 5, an intensively farmed area in West Tenenssee, only 21 per cent of the respondents reported the raccoon utilizing their farm and 29 per cent the sampling area. Similarly in Central Tennessee, farming-type 9 is accompanied by 28 per cent of the respondents reporting the raccoon on their farm. In the Unaka Range, farming-type 15, there was a three-fold increase in the per cent of respondents reporting the raccoon on the sampling area over the per cent reporting the animal on their farm. A possible explanation could be that the raccoon is generally distributed throughout the farming-type but occurs primarily in the non-farm areas in these forested mountains.

Of the 3,560 heads of farm households interviewed, 44.7 per cent hunted, with an estimate of 13 per cent of these hunters hunting raccoon. The small sample sizes in the farming-types of highest farmer raccoon-hunting intensity. It is estimated that heads of farm households harvested 53,472 racoon while hunting in Tennessee during the period of study (Schultz *et al.*, 1954). Although it was illegal to trap raccoon during the study period, 25 of the 211 trappers interviewed trapped raccoon.

Raccoon population trends on the sampling areas during the five years preceding study were reported as: up, 38 per cent;

down, 9 per cent; fluctuating, less than .5 per cent; no change, 17 per cent; unknown, 34 per cent of the respondents. Where a change was indicated, the largest per cent of respondents in all farming-types, except 15, reported raccoon populations as up (Schultz *et al.*, 1954).

It can be concluded that the highest raccoon populations in Tennessee are in West and Central Tennessee. Apparently these regions contain two low population disjunct areas, farming-types 5 and 9, respectively. It is apparent from the data presented in this paper that our knowledge of the raccoon in Tennessee is limited and that taxonomic and life history studies of the animal are needed.

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## References

Conaway, C. H., and J. C. Howell. 1953. Observations on the mammals of Johnson and Carter counties, Tennessee, and Avery County, North Carolina. *Jour. Tenn. Acad. Sci.*, 28 (1): 53-61.

Goldman, E. A. 1950. Raccoons of North and Middle America. *U. S. Fish and Wildlife Service. N. Amer. Fauna* No. 60. Pp. i-vi, 11-53.

Hamilton, W. J., Jr. 1943. *The mammals of eastern United States.* Comstock Publishing Co., Inc., Ithaca, N. Y. Pp. 1-432.

Howell, J. C., and C. H. Conaway. 1952. Observations on the mammals of the Cumberland Mountains of Tennessee. *Jour. Tenn. Acad. Sci.*, 27 (2): 153-158.

Kellogg, Remington. 1939. Annotated list of Tennessee mammals. *Proc. U. S. Nat. Museum,* 86 (3051): 245-303.

Luebke, B. H., S. W. Atkins, and C. E. Allred. 1947. Types of farming in Tennessee. *Tenn. Agr. Exp. Sta. Bull.* No. 169. Pp. 1-94.

Nelson, E. W., and E. A. Goldman. 1930. Six new raccoons of the *Procyn lotor* group. *Jour. Mamm.,* 11 (4): 453-459.

Schultz, Vincent. 1952. A survey design applicable to state-wide wildlife surveys. *Jour. Tenn. Acad. Sci.*, 27 (1): 60-66.
1954. Wildlife surveys—a discussion of a sampling procedure and a survey design. M. S. Thesis, Virginia Polytechnic Institute, Blacksburg, Va. Pp. 1-166.

Schultz, Vincent, E. Legler, Jr., W. H. Griffin, G. A. Webb, R. H. Anderson, W. M. Weaver, Jr., and J. A. Fox. 1954. Statewide wildlife survey of Tennessee: a study of the land, wildlife, farmer, hunter and trapper. Final Rept., P-R Proj. W-16-R, Tennessee Game and Fish Commission, Nashville, Tenn. Pp. 1-506.

Wing, Leonard. 1940. A game survey in northeastern Tennessee. *Jour. Tenn. Acad. Sci.,* 15 (3): 309-320.