

# Response of Eastern Tennessee Raccoon Hunters to Managed Hunting

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*Abstract:* Raccoon (*Procyon lotor*) hunters ( $N = 269$ ) who participated in 3 nights of managed raccoon hunting in eastern Tennessee during 1984 were surveyed by mail questionnaire; 149 (55%) responded. Hunters responded favorably to hunting in assigned areas, limiting hunting party size to 3 persons, and restricting the number of dogs to 1/hunter. Ninety-eight percent planned to hunt under the same managed conditions in 1985. Hunters estimated they spent \$15 a night to hunt and were willing to pay an additional \$5-\$10 for a 1-day permit to finance raccoon management practices. The majority of the raccoon hunters surveyed were blue-collar workers, 37-40 years of age, had hunted for 21 years, and had traveled to other states, even outside the southeastern United States, to hunt raccoons.

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Since the early 1950s, raccoon hunting has occurred on Chuck Swan Wildlife Management Area (CSWMA), Sharps Chapel, Tennessee. Intense hunting pressure and the subsequent overharvest of raccoons caused season closures from 1965 to 1970 and again from 1979 to 1983. During this 30-year history, no limits were placed on hunting party size, dogs per hunter, or number of parties hunting per night. Hunting pressure has been as high as 1 hunter/30 ha on the 9,872-ha peninsula. The most recent season (1973-79) length was 9 nights of hunting, with a bag limit of 1 raccoon/party (Minser and Pelton 1982). During the 1976 season, 638 parties composed of 1,516 hunters with 1,849 dogs hunted CSWMA for raccoons (Woods 1978). This hunting pressure indicates the demand in eastern Tennessee for raccoon hunting in an area where basic carrying capacity for the species is low (Minser and Pelton 1982).

After 5 years of closure to raccoon hunting, the area was opened for an

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experimental hunt to assess the extent of recovery during this period. A survey questionnaire was developed to evaluate the revised raccoon hunting format. Since little information is presently available to characterize the opinions of raccoon hunters, these results should be useful in making management decisions concerning their sport.

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## Methods

Three nights of raccoon hunting were conducted on CSWMA in November and December 1984. These hunts were closely supervised by TWRA personnel. The hunting format was "experimental" because parties were restricted to a maximum of 3 persons and they were assigned to hunt a specific management compartment. Each hunter was limited to 1 dog. Prior to the hunts, permits were distributed to 43 parties for each night. Thirteen of CSWMA's 18 compartments were available for hunting. Four parties were assigned to each of 5 compartments, and the remaining 8 compartments were assigned 3 parties each. Each hunting party was allowed to kill 1 raccoon per night within its assigned compartment. The compartments on CSWMA were defined by roads or Norris lake, and were easily distinguishable.

During March 1985, 269 questionnaires were mailed to hunters who participated in 1 or more of the nightly raccoon hunts held during fall 1984. Addresses were obtained from permit applications completed before the hunts. Each envelope contained a questionnaire, cover letter, and a stamped return envelope. Each was identified by a control number to provide a list of non-respondents who were contacted through a follow-up mailing in mid-April 1985. The follow-up mailing was conducted to increase sample size. Follow-up surveys could not be distinguished from first responses, therefore non-response bias was not examined.

The questionnaire consisted of 40 questions in 3 sections: raccoon hunts on CSWMA, general raccoon hunting, and general demographic information. Percentages are reported for the total number of responses to a particular question, which often was less than the total number of returned surveys.

## Results and Discussion

Questionnaires were returned by 149 hunters (55%). Of those, 22% (33) hunted more than 1 of the 1984 CSWMA raccoon hunts.

### CSWMA Raccoon Hunts

Seventy-nine percent of the hunters heard about the hunts from the TWRA or a friend. Eighty-six percent of the hunters were able to attend those nights for which

they were drawn. Work conflicts and personal or dog illnesses accounted for 65% of the non-attending permit holders.

The majority of responding parties were composed of friends (53%), although family members (22%), and family/friends (23%) also formed hunting groups. These responses differed from a 1:1:1 ratio ( $\chi^2 = 115.6$ , 2 df,  $P < 0.001$ ).

Most hunters (87%) stated that other participants interfered very little, if any, with their own enjoyment of the hunt ( $\chi^2 = 70.0$ , 1 df,  $P < 0.001$ ). These results imply that future managed hunts could maintain or possibly increase the number of parties allowed to hunt each night. Managers should offer increasing numbers of permits to determine the maximum number of users who can hunt without jeopardizing the resource or hunter enjoyment. Therefore, maximum recreational benefit would be provided on a sustainable basis.

When compared to previous hunts on CSWMA and other areas hunted in eastern Tennessee, the 1984 raccoon hunts were rated as "better than most" by 69% and 82% of the respondents, respectively. The overall party success rate for the 1984 raccoon hunts on CSWMA was 74% or 5.5 hours/raccoon. Bag check data indicated hunter success in eastern Tennessee dropped from 6.3 hours/raccoon in 1969 to 12.5 hours/raccoon in 1974 (Whitehead 1975). The fall raccoon population on CSWMA was estimated at 1 raccoon/11.6 ha (Kocka 1987); this density exceeded greatly that of open counties in most of eastern Tennessee (Minser and Pelton 1982). When asked to compare the raccoon population on CSWMA to those in the open counties of eastern Tennessee, 93% agreed that the management area had a greater population ( $\chi^2 = 94.1$ , 1 df,  $P < 0.001$ ). Seventy-nine percent of the respondents favored the raccoon management on CSWMA, and 76% liked the way the raccoon hunts were managed. When asked to suggest any changes that they might like to see in the current harvest management on CSWMA, "no changes" and "more hunts" each accounted for 36% of the responses.

The greater density of raccoons on CSWMA likely attracted raccoon hunters to the area. This managed area demonstrates the capability of open counties in eastern Tennessee to sustain equivalent population densities given proper management. These data indicate that sportsmen realized the higher quality of hunting that resulted from such management.

Each hunter was asked to estimate the "out-of-pocket" expenditures for the night(s) hunted. Hunters were instructed to include only those items used specifically for each night's hunt (i.e., gas, food, and ammunition). The mean response was \$15 for each of the 3 nights (range = \$4-\$35,  $SE \leq 1.20$ ). The \$15 estimate is much below the \$26/day/hunter value reported by the U.S. Department of Interior, Fish and Wildlife Service (1982) for "all hunters," but twice that of \$7/day/hunter for "other animal hunters." This \$15 value can be used to estimate the role the raccoon hunter may play in local economies.

When asked the maximum amount that they would pay for a 1-day permit to hunt raccoons on CSWMA, if the money was used for raccoon management, 76% suggested amounts ranging from \$5-\$10 ( $\bar{x} = \$8.85$ ). This question should have specified habitat manipulation and not stocking as methods of managing raccoons.

However, raccoon hunters were willing to increase their daily expenditure by as much as 66% to help support high-quality raccoon management and hunting on public areas.

Considering the high success rate (74%), it is not surprising that 98% of the hunters responding said they would hunt CSWMA again in 1985. Of those respondents who indicated party success during the raccoon hunts, 82% harvested raccoons and 18% did not. This may indicate that successful hunters were more likely to return surveys even though non-response bias was not analyzed. However, the results still indicate overwhelming support for the revised hunting format on CSWMA.

#### General Raccoon Hunting

Parents (39%) were more likely to take a person (child) on their first raccoon hunt than a friend or another relative (24%). Most hunters (91%) felt the desirable number of persons to have in a hunting party was either 3 or 4 ( $\bar{x} = 3.2$ ; range = 1–5); this strongly supports the maximum party size of 3 persons for the CSWMA hunts. Seventy-seven percent felt that 4 or 5 ( $\bar{x} = 4.3$ ) persons were the maximum they could pleasantly tolerate. This suggests that party size may be self regulating for raccoon hunters, and future hunts could eliminate the party size restriction.

With respect to the total years each participant had hunted raccoons, answers ranged from 1–60 with a mean of 21. Minimum and maximum ages of hunters were 13 and 79, respectively. The majority of raccoon hunters on CSWMA were 38–40 years old and had hunted for 21 years. In a national survey, 31% of the “other animal hunters” were between the ages of 25–34, whereas only 16% were between 35–44 years of age (U.S. Dept. Int., Fish and Wildl. Serv., 1982). Although answers ranged from 0–112 in the present study, the mean number of nights per season spent hunting was 28. The 1982 survey showed that “all hunters” averaged 15 days afield per season, while “raccoon hunters” spent 17 nights afield. Clark (1984) consistently found Arkansas raccoon hunters spent an average of 21 nights afield per season from 1979 to 1982. The higher mean found by Clark (1984) and this study may be related to the milder climate of the southeastern United States.

In addition to hunting in Tennessee, respondents hunted in 19 other states; the top 5 states were Georgia (21%), South Carolina (14%), Michigan (12%), Indiana (11%), and North Carolina (11%). Eighty-four percent hunted in as many as 4 states other than Tennessee. These hunters apparently were willing to travel great distances and possibly for extended periods of time for raccoon hunting.

The mean number of dogs owned per hunter was 2.6 (range = 0–17). Eighty-three percent of the owners had 3 dogs or less. In Arkansas, Clark (1984) reported the average number of dogs per hunter (for general houndsmen) dropped from 2.5 in 1979–80 to 1.5 in 1981–82. When asked to estimate the value per dog, the mean was \$710 and the mode was \$500 (20%). Sixty-one percent placed a value of \$500–\$1,000; the maximum value placed on any dog was \$3,400.

Of the hunters polled, 95% claimed to actively train their dogs during some part of the year. Seventy hunters (49%) train through several seasons, and 27 (19%) train throughout the year. Of those hunters who train during more than 1 season,

the preference of seasons used by hunters were fall (89%), winter (65%), summer (44%), and spring (29%).

Raccoon hunters varied in hunting interests. In addition to opossum (*Didelphis virginianus*) (69%), which can be hunted simultaneously with raccoon, squirrel (*Sciuridae* spp.) (79%), white-tailed deer (*Odocoileus virginianus*) (64%), and rabbit (*Sylvilagus* spp.) (64%) also were popular game.

Fifty-eight percent of the responding hunters did not belong to a hunting club, organization, or association. Hunters who were members belonged to an average of 1.5 clubs (range = 1–5). Thirty-one clubs were represented, of which 27 (87%) were associated with dog ownership or hunting with dogs.

### General Demographic Information

Of hunters responding ( $N = 140$ ), the majority (91%) worked blue collar jobs ( $\chi^2 = 79.1, 1 \text{ df}, P < 0.001$ ). Individuals listed 57 different occupations with factory workers comprising the largest concentration (19%). Thirteen percent of the respondents worked in the construction industry while 12% farmed.

Forty-six percent of those responding listed their total household income for 1984 as \$10,000–\$19,999 while 22% earned \$20,000–\$29,999. Comparatively, 34% of “other animal hunters” earned between \$10,000–\$20,000 while 32% of “all hunters” were in this same income bracket (U.S. Dep. Int., Fish and Wildl. Serv. 1982).

Fifty-five percent of the respondents had either graduated from high school or were working on a high school degree. Only 7% were working on or had completed a college degree. Forty-two percent of “other animal hunters” in a national survey had high school degrees, and 25% had completed some college or held an advanced degree (U.S. Dep. Int., Fish and Wildl. Serv. 1982).

### Management Implications

Dissatisfaction with the limited raccoon resources in the open counties of eastern Tennessee is expressed annually by raccoon hunters at public hearings and TWRA Commission meetings. In response to low raccoon numbers, hunters have resorted to importing and stocking raccoons and have resisted attempts by TWRA to restrict dog training and hunting season length. However, our survey revealed that raccoon hunters are realizing the importance of public hunting lands and are willing to make sacrifices to insure an optimum sustained yield of native raccoons. These concessions include the willingness to hunt under restrictive conditions and to pay user fees for management programs. Whether such concessions would be accepted for other public or private lands in eastern Tennessee is unknown.

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