

Attitudes and Opinions of Virginia's Spring Turkey Hunters towards Safety Issues

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Abstract: A questionnaire entitled "Spring Turkey and Other Hunting in Virginia: A Hunter Survey" was sent to 2,500 randomly selected Virginia resident hunting license holders, 440 of whom were spring turkey hunters. The questionnaire focused on 4 aspects of spring gobbler hunting: economics, season structure, aspects of enjoyment, and safety. This paper deals with the attitudes and opinions of Virginia's spring turkey hunters towards specific issues relating to safety during the spring season. Simple means or frequencies were computed for all responses to survey questions. Responses to questions were compared using the X^2 test for independence. The average Virginia spring turkey hunter was male, 38 years old, and had hunted during the spring gobbler season for about 10 years. Most felt that the site they hunted on during their last trip of the 1990 spring season was not crowded. Over 45% had felt in danger of being shot at least once during their spring turkey hunting experiences. While a majority did not feel that there were too many turkey hunters, many felt that there were too many inconsiderate and unskilled turkey hunters. A majority of hunters were still opposed to a mandatory hunter orange requirement during the spring season and to shot size restrictions. Hunters who had felt in danger of being shot during the spring season tended to report a higher degree of crowdedness as well as a greater problem with interference by other hunters. Hunters who belonged to an outdoor-oriented organization were more likely to oppose requiring hunter orange and to support the prohibition of rifles during the spring gobbler season. Hunters who hunted on federal land reported a higher degree of crowdedness on their hunting size. Overall, our results suggest that, from the hunters' point-of-view, additional regulations during the spring season are not acceptable means to improve safety.

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Hunting safety considerations are becoming increasingly important to wildlife managers. As the human population increases, land on which to hunt becomes more

scarce. Between 1977 and 1986, more than 503,000 acres of timberland in Virginia were lost due to conversion to urban uses (Bechtold et al. 1987). This was the largest change of its kind since Virginia's forests were first surveyed in 1940. Overall, the net area of timberland in Virginia declined by 3% between 1977 and 1986. Trends like this may lead to increased crowding of hunting sites in Virginia. With these facts in mind, wildlife resource professionals must become more aware of the attitudes and opinions of hunters towards hunting safety. Spring turkey hunting is of special concern. The spring gobbler hunter usually camouflages himself as completely as possible and then sits by a tree and attempts to call gobblers to him. Such conditions make it relatively easy to mistake another hunter for a bird. For example, during the 1986 spring gobbler season in Missouri, there were 29 reported hunting accidents (Vangilder et al. 1990). Seventy-eight percent of these were due to the shooter mistaking the other hunter for game. During the 1990 Virginia spring gobbler season, there were 5 reported hunting accidents, 4 of which were mistaken for game (Va. Dep. Game and Inland Fish. 1990 unpubl. rep.).

Most states publish yearly reports on hunting accident statistics. Few of these publications, however, have delved into the attitudes and beliefs hunters have about hunting safety issues. This study examines hunters' attitudes and beliefs about specific safety issues during Virginia's spring gobbler season. This study is only the beginning of the research necessary to thoroughly understand the safety considerations during spring gobbler season in Virginia.

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Methods

A random sample of 2,500 individuals was taken from the population of all purchasers of 1989-90 Virginia resident hunting licenses. Each individual in the sample was mailed a 10-page questionnaire entitled "Spring Turkey and Other Hunting in Virginia: A Hunter Survey" in June 1990. A postcard follow-up reminder was sent 2 weeks after the initial mailing. A second questionnaire was mailed to all non-respondents 2 weeks after the postcard reminder. After another 2 weeks, a final postcard reminder was sent to all non-respondents. Questionnaire design and implementation were mostly based on Dillman's method (1978).

The questionnaire was designed to focus on 4 primary aspects of spring gobbler hunting. These aspects were: economics, season structure, aspects of enjoyment, and safety. This paper deals only with the questions related to safety.

Responses to the questions were analyzed using the mainframe version of SAS (SAS Inst., 1985). The summary statistics for each question producing categorical data were computed as simple frequency tables. Means, standard deviations, minimums, and maximums were computed for all continuous variables. Tests for relationships between responses to questions were tested using the X^2 test for independence. The nature of the relationships were inferred from the phi (ϕ) coefficients. The ϕ

coefficients are measures of the strength of association between 2 variables that are based on the X^2 test. They range from a minimum of -1 for a strong negative association to a maximum of $+1$ for a strong positive relationship.

Results and Discussion

Out of the 2,500 questionnaires mailed, there were 1,396 respondents, 894 non-respondents, and 210 non-deliverable questionnaires. The overall response rate was 61%. This response rate was within the range predicted by Dillman (1978) for surveys that used his methodology. Four-hundred forty of the 1,396 respondents (32.7%) hunted turkey during the 1990 spring gobbler season.

The average 1990 Virginia spring turkey hunter was male (98.2%), 38 years old ($SD = 12.6$), had hunted (any game) for about 25 years ($SD = 12.3$), and had hunted during spring gobbler season for about 10 years ($SD = 7.6$). Eighty-three percent of them had hunted during spring gobbler season for ≤ 16 years. Approximately 40% of the spring turkey hunters sampled belonged to an outdoor-oriented organization. Educationally, 53.2% had at least some high school education while 34.5% had reached college (Table 1). More than half (56.1%) of the spring turkey hunters surveyed earned $< \$35,000$ a year.

The south central (27.9%) and southwest (26.4%) regions of Virginia were the most frequently hunted. The eastern region (13.6%) was the least frequently hunted. Most hunters (83.6%) hunted either on private land (72.2%) or federal land (11.4%) (Table 2). Seven and a half percent of the sampled hunters hunted on both federal and private land.

Whether or not a hunting site was crowded was especially important to the spring gobbler hunter. Crowding by other hunters may affect the quality of the hunt and hunter perceptions regarding safety. In Arkansas, Cartwright and Smith (1990) found that 47.6% of the Arkansas turkey hunters surveyed enjoyed turkey hunting

Table 1. Characteristics of Virginia's spring turkey hunters—1990.

Characteristic	Response	N	Percent
Belongs to a hunting or conservation organization	Yes	428	40.7
	No		59.3
Experience with spring gobbler hunting	1–8 years	426	49.3
	9–16 years		34.0
	17–24 years		4.0
	≥ 25 years		12.7
Highest educational level	Grade school	432	5.6
	High school		53.2
	College		34.5
	Post graduate		6.7
Total household income	\$0–\$19,999	412	23.8
	\$20,000–\$34,999		32.3
	\$35,000–\$49,999		25.7
	$\geq \$50,000$		18.2

Table 2. The types of land that turkey hunters used during Virginia's 1990 spring gobbler season ($N = 439$).

Land type	Frequency	Percent
Private	317	72.2
Federal	50	11.4
Private and federal	33	7.5
Private and state	24	5.5
State	14	3.2
State and federal	1	0.2

less because of overcrowding. In Missouri, hunter satisfaction with the 1988 spring season decreased as the number of other hunters seen and the level of interference increased (Vangilder et al. 1990). Hawn et al. (1987) reported that in Michigan ratings of hunt quality were significantly associated with encountering other hunters. In the study by Hawn et al. (1987), 47% of the turkey hunters surveyed who saw no other turkey hunters reported good or very good hunts. In our study, most hunters surveyed did not believe that the site on which they hunted during their last trip of the 1990 spring gobbler season was very crowded. On a scale ranging from 1 (not crowded) to 5 (very crowded), 70.9% reported that their site was not crowded (1), 8.4% reported that it was crowded (3), and only 0.9% reported that it was very crowded (5).

When hunting sites become crowded, interference by other hunters may also become a problem. In Ohio, Donohoe and McKibben (1973) showed that as hunting pressure (i.e., the number of hunters) increased, turkey hunters complained more about interference and crowding. On a scale of degree of interference ranging from 1 (no problem) to 5 (great problem), 42.1% of the hunters surveyed in our study reported no problem (1), 15.5% reported little problem (2), and 30.3% reported a moderate problem (3) throughout all of their spring turkey hunting experiences. These figures indicate that while there is not a great problem with interference by other hunters in Virginia, some interference does occur. In Missouri, Vangilder et al. (1990) had similar results with 49.7% of their sample reporting no problem and 20.2% reporting somewhat of a problem. One aspect of interference is the danger of being shot by another hunter. Over 45% of the spring turkey hunters surveyed had felt in danger of being shot at least once during all of their spring turkey hunting experiences (Table 3). In the Missouri spring turkey hunting survey, 35.5% of the hunters had ever felt in danger of being shot during their spring turkey hunting experiences (Vangilder et al. 1990). Despite the rather high percentages of hunters that had felt in danger of being shot, most of the hunters did not report major problems with crowding or interference by other hunters.

An interesting question addressed in this study was how spring turkey hunters view their fellow spring turkey hunters. Most (77.9%) hunters surveyed felt that there were too many turkey hunters of some type. When analyzed individually,

Table 3. Number of times Virginia hunters felt in danger of being shot during all spring gobbler seasons during which they hunted, hunter survey 1990. ($N = 432$)

Category	Percent
Never	54.9
1-2	35.6
≥ 3	9.5

10.5% felt that there were too many turkey hunters, 38.9% felt that there were too many unskilled turkey hunters, 42.7% felt that there were too many inconsiderate turkey hunters, and 35.5% felt that there were too many turkey hunters who take over their limit during the spring season (Table 4). In Missouri, Vangilder et al. (1990) found that 18.4% of their sampled spring turkey hunters felt that there were too many turkey hunters during the spring season. Thus, the question to be addressed may not be one of overall crowdedness in terms of numbers of spring turkey hunters, but of the number of inconsiderate or unskilled spring turkey hunters.

Perhaps the most controversial issues surrounding spring gobbler season in Virginia are the use of hunter orange, the restriction of shot size, and the prohibition of rifles during the spring gobbler season. Nearly 75% of the hunters surveyed felt that an outer garment of hunter orange should not be required during the spring gobbler season (Table 5). This was lower than the percentages found in other studies. When they asked the same question, the West Virginia Department of Natural Resources found that 95% of their sampled hunters did not approve of mandatory hunter orange for the spring season (Pack 1989). In Missouri, 82.3% of the sampled spring turkey hunters were opposed to a hunter orange requirement during the spring turkey season (Vangilder et al. 1990). In Arkansas, Cartwright and Smith (1990) found that 88.2% of the spring turkey hunters surveyed were opposed to mandatory hunter orange for the spring turkey season. Deer hunters, on the other hand, have been found to favor hunter orange during the fall deer season. In Missouri, Porath

Table 4. How Virginia turkey hunters felt about the number and types of other turkey hunters during the 1990 spring gobbler season.

Category	N	Frequency	Percent
Too many turkey hunters	411	43	10.5
Too many unskilled turkey hunters	412	160	38.9
Too many inconsiderate turkey hunters	412	178	42.7
Too many that take over their limit	414	148	35.5

Table 5. The numbers and percentages of spring turkey hunters who supported restrictions during spring turkey season, Virginia hunter survey, 1990.

Issue	N	Percent
Hunter orange should be required	431	15.3
No. 4 or smaller shot required	433	36.0
Rifles should be prohibited	433	48.3

et al. (1980) found that 91.0% of the hunters they surveyed favor the required hunter orange during deer season.

The use of hunter orange for the spring gobbler season has been proposed because it is proven effective in reducing accidents during the deer season. The problem with using it during the spring gobbler season is that turkeys are able to see color (Eriksen et al. 1985). In a Virginia and New Jersey study, hunters using hunter orange while spring turkey hunting were less successful than those not using it (Eriksen et al. 1985). In Missouri, hunters who reported wearing hunter orange at all times while turkey hunting were less successful than those who never reported wearing it (Vangilder et al. 1990).

Witter et al. (1982) studied the use of a hunter orange "alert band" to be used during the spring gobbler season in Missouri. They concluded that turkeys can be harvested while a hunter is displaying a hunter orange band either on the tree he is next to or on himself. They found almost no difference between the distances at which turkeys were taken by hunters using and not using the orange bands. They also found, however, that a significant percentage of their hunters (32.0%) disliked the alert band. Many hunters felt that the band impeded their movement while working the gobbler because it was necessary to remove it from one tree and put it on another as they moved with the bird. Over 50% of the participants in Witter et al.'s study who saw turkeys but were not successful believed that the "alert band" affected their ability to call in and shoot a gobbler. More study is needed to determine how turkeys react to hunter orange.

When asked if spring turkey hunters should be required to use number 4 or smaller size shot, 51.3% of our respondents said "no" and 36.0% responded "yes" (Table 5). The remainder were not sure. In Missouri, the majority of the spring turkey hunters surveyed (79.4%) reported using number 4 or smaller shot before a shot size restriction (\leq no. 4) was implemented in 1987 (Vangilder et al. 1990). Although not required, number 4 or smaller shot were probably the most frequently used during Virginia's 1990 spring gobbler season. Hunters who use the smaller shot, however, still may be opposed to the restriction. The responses to the question of whether rifles should be prohibited during the spring gobbler season were split almost equally. Fifty-one percent supported their prohibition and 48% were against it.

Out of the many variable combinations tested for dependence using the X^2 test,

only a dozen proved to be statistically significant. Whether or not the respondent had ever felt in danger of being shot by another turkey hunter during the spring gobbler season was significantly related to the responses to the questions measuring the degree of crowdedness felt on the site hunted during their last trip and the degree of interference experienced during all of their spring turkey hunting ($X^2 = 21.5$, $P < 0.001$; $X^2 = 66.3$, $P < 0.001$, respectively) (Table 6). Hunters who had felt in danger of being shot tended to report a higher level of crowdedness during their last trip of the 1990 season ($\phi = 0.224$) as well as a greater problem with interference by other hunters during Virginia's spring season ($\phi = 0.398$). Hunters who had felt in danger of being shot one or more times were more likely to feel that there were too many turkey hunters ($X^2 = 8.31$, $P = 0.004$, $\phi = 0.143$) as well as too many inconsiderate turkey hunters ($X^2 = 14.02$, $P < 0.001$, $\phi = 0.185$). There was no statistically significant relationship between having felt in danger of being shot and the region in which they hunted on their last trip in 1990 ($X^2 = 1.06$, $P = 0.900$, $\phi = 0.051$).

The responses to the questions on shot size restriction and rifle prohibition were significantly related to how the respondent felt about the number and type of turkey hunters. Those respondents who felt that there were too many turkey hunters overall were more likely to support shot size restrictions ($X^2 = 5.06$, $P = 0.024$, $\phi = 0.119$). Those respondents who felt that there were too many unskilled spring turkey hunters were more likely to support the prohibition of rifles during the spring gobbler season ($X^2 = 4.50$, $P = 0.034$, $\phi = 0.108$). Additionally, those respondents reporting a greater problem with interference by other spring turkey hunters were more likely to feel that there were too many spring turkey hunters ($X^2 = 52.46$,

Table 6. Percent of Virginia's spring turkey hunters who felt different degrees of crowdedness and interference by whether or not they had ever felt in danger of being shot, hunter survey 1990.

	Had felt in danger of being shot		Never felt in danger of being shot	
	Percent	Frequency	Percent	Frequency
Crowding				
1 (not crowded)	38.3	116	61.7	187
2	60.5	46	39.5	30
3 (crowded)	63.9	23	36.1	13
4	72.7	8	27.3	3
5 (very crowded)	50.0	2	50.0	2
Interference				
1 (no problem)	25.6	45	74.4	131
1	35.4	23	64.6	42
3 (moderate problem)	61.4	78	38.6	49
4	77.42	24	22.58	7
5 (great problem)	80.0	16	20.0	4

$P < 0.001$, $\phi = 0.362$), too many unskilled spring turkey hunters ($X^2 = 25.32$, $P < 0.001$, $\phi = 0.252$), and too many inconsiderate spring turkey hunters ($X^2 = 38.16$, $P < 0.001$, $\phi = 0.308$).

Whether or not the respondents belonged to an outdoor-oriented organization was related to how they responded to the safety questions on hunter orange and the use of rifles during the spring gobbler season. In general, members of outdoor-oriented organizations were more likely to oppose requiring hunter orange during the spring gobbler season ($X^2 = 8.24$, $P = 0.004$, $\phi = -0.147$) and more likely to support the prohibition of rifles during the spring gobbler season ($X^2 = 10.09$, $P = 0.001$, $\phi = 0.159$).

Although the degree of crowdedness reported by hunters in this sample was not significantly related to the region they hunted in during the spring gobbler season ($X^2 = 1.74$, $P = 0.784$, $\phi = 0.063$), there was a significant relationship between whether or not they hunted on federal land and degree of crowdedness reported. The people who hunted on federal land during their last trip of the 1990 season were more likely to report a higher degree of crowdedness ($X^2 = 20.83$, $P < 0.001$, $\phi = 0.220$). In Missouri, respondents who hunted on public land also reported more interference by other hunters and saw more hunters than those who hunted on private land (Vangilder et al. 1990).

Although the spring turkey hunters surveyed in this study did not report serious problems with crowding of their hunting site on their last trip of the 1990 season and with interference by other hunters during their spring turkey hunting experiences, many felt that there were too many unskilled and inconsiderate spring turkey hunters. Over 45% of the hunters surveyed had felt in danger of being shot at least once during their spring turkey hunting experiences. Despite this, 75% of turkey hunters in Virginia were opposed to mandatory hunter orange, 51.3% were opposed to shot size restrictions, and 48% were against the prohibition of rifles during the spring season. Those hunters who had felt in danger of being shot reported a higher level of crowdedness during their last trip of the 1990 season and a greater problem with interference by other hunters while hunting turkeys in the spring.

In Virginia, the estimated number of spring turkey hunters climbed from approximately 27,000 in 1969 to over 86,000 in 1990 (Gwynn, J. V. 1990 unpubl. data). The estimated harvest of turkeys in the spring increased from 1,857 in 1969 to 15,126 in 1990 (Gwynn, J. V. 1990). If turkey hunting continues to increase in popularity and the area of forested land continues to decrease, hunting sites can only become more crowded. More crowding will lead to an increased chance of hunting accidents. During the 1982 spring gobbler season in Missouri, Witter et al. (1982) noted that the mean distance for hunting accidents was 33 m with 40% of accidents occurring at over 36 m. Witter et al. (1982) suggested that to shoot a bird accurately it should be within 28 m. These figures imply that those hunters involved in mistaken for game accidents shoot before their target is close enough to accurately identify. The result of our study suggest that, from the hunters' point-of-view, requiring hunter orange and restricting shot size or rifles are not acceptable means of reducing this type of hunting accident during the spring season. Perhaps the best way to

prevent the number of mistaken for game accidents from increasing as sites become more crowded is to heighten awareness of problems and safety precautions. Education, either through the distribution of materials or actual programs, may help reduce the number of this type of hunting accident.

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