Attitudes of Wild Turkey Hunters Toward Potential Regulation Changes in Mississippi

John T. Forbes, *Social Science Research Center, Mississippi State University, Mississippi State, MS 39762*

K. David Goldwin, *Mississippi Department of Wildlife, Fisheries and Parks, Jackson, MS 39205*

George A. Hurst, *Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, MS 39762*

Abstract: Numbers of wild turkeys (*Meleagris gallopavo*) and turkey hunters have increased greatly in the Southeast during the last 3 decades, and administrators and managers should be aware of hunter attitudes toward potential hunting regulation changes. Our objective was to determine attitudes of turkey hunters regarding regulations on use of hunter orange, baiting, and a fall either-sex harvest. We conducted a mail survey of turkey hunters (N = 4,026) who hunted turkeys in Mississippi during the 1994 spring gobblers-only season. An initial mailout was followed by a second request, and a total response rate of 51% was attained. Logistic regression analyses were used in 3 models—1 for each potential regulation. Twenty-five hunting and demographic variables were entered into each model based on forward stepwise variable selection. Most (89%) of the respondents disagreed that turkey hunters should have to wear blaze orange. A total of 81% of respondents disagreed that baiting for turkeys should be legal. Finally, 58% of the respondents opposed a state-wide, fall either-sex turkey hunting season. Attitudes found to be significantly associated with each model (i.e., a regulation) are presented. Wildlife managers should consider hunter attitudes when deciding upon regulations.

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Wild turkey populations in many southeastern states have increased greatly in the last 2 decades, and number and effort (hunter-days) of turkey hunters also have increased (Kennamer et al. 1992, Shropshire 1994). Wildlife administrators and managers should consider 3 elements of wildlife management: population status, habitat conditions, and people (Giles 1978). Decisions about hunting regulations, which attempt to manage the hunter and/or harvest, often are based upon insufficient data on hunter attitudes regarding regulations. Human dimensions are very important aspects of managing wildlife, and managers should consider hunter attitudes and opinions when developing regulations.

Turkey hunting is a popular sport in Mississippi, with an average of 45,000 hunters and 400,000 hunter-days each year. Demographics and characteristics of turkey hunters have been obtained in Mississippi (Palmer et al. 1990, Godwin, unpubl. data) and other southeastern states (e.g., Vangilder et al. 1990, Cartwright and Smith 1990). Other studies have reported attitudes and opinions towards potential regulations, safety, and hunt quality (e.g., Hawn et al. 1987, Steffen et al. 1988, Eichholz and Hardin 1990, and Bittner and Hite 1991). State wildlife agencies are attempting to manage wild turkey populations by habitat management and hunter regulations (e.g., season, bag limit, shotgun/shell requirements). Thackston and Holbrook (1996) noted that the best management of the wild turkey resource included gaining an understanding of hunter attitudes and using this information during planning. Regulations concerning blaze-orange requirements, baiting, and either-sex fall hunting are being discussed in Mississippi and other southeastern states with large, stable turkey populations. Our objective was to determine whether turkey hunters favored or opposed 3 potential regulations, and to evaluate factors that may have affected their opinions (Forbes 1997).

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Methods

A random sample of 4,026 wild turkey hunters who purchased a sportsman's license in 1994 was obtained from the MDWFP. A sportsman's license cost $32.00 in 1994 and allowed hunting of all species. A regular resident hunting license, needed to hunt turkey, cost $17.00 in 1994. The list was selected from hunters who indicated on their license renewal application that they had hunted turkeys in Mississippi in spring 1994 (C. Shropshire, MPWFP, pers. commun.).

A mail survey consisting of 41 questions was used to determine turkey hunting effort, success, illegal activity, demographic characteristics, and opinions about potential regulation changes (Forbes 1996). We used a modified total design method (TDM) (Dillman 1978). The TDM consists of 3 first-class mailings and a fourth mailing by registered mail. However, because of financial constraints and the nature of some of the questions asked (illegal activities), only 1 first-class mailing and a postcard reminder were used. No study of nonrespondents was conducted, so we did not obtain a measure of nonresponse bias (Filion 1980).

Logistic regression analysis was used to model characteristics of turkey hunters and their attitudes toward potential regulation changes used as dependent variables (Afifi and Clark 1990). The 3 regulations addressed were: hunter attitudes about being

required to wear hunter orange (model 1), hunter attitudes about legalizing baiting for turkey hunting (model 2), and hunter attitudes about a state-wide fall either-sex turkey hunting season (model 3). Two regulation questions were asked based on a Likert scale (Babbie 1990) but were recoded into 1 (strongly agree and agree) and 0 (strongly disagree and disagree). The third was a yes/no question with yes = 1 and no = 0. Twenty-five hunting and demographic variables were considered for entry into each model based on forward stepwise variable selection ($P < 0.05$ to enter and $P > 0.10$ for removal) (Norusis 1993). The exponential function (Exp(β)) was used to determine the odds ratio which will indicate those who are more or less likely to participate in an activity.

Results

A total of 2,236 (55%) usable surveys was returned. Survey answers were placed into SPSS for analysis (Norusis 1993). Ten variables were significant in at least 1 model (Table 1). Overall, 10% and 89% of respondents agreed and disagreed, respectively, about being required to wear blaze orange while turkey hunting and 4 variables entered the model (Table 2). Hunters who harvested or attempted to harvest a hen during a gobblers-only season were 74.5% more likely than hunters who did not violate to favor the use of blaze orange ($P = 0.001$). The more important turkey hunting was to respondents, the less likely ($P < 0.001$) they were to favor blaze orange for turkey hunting, by 47.3%. Older hunters were 2% more likely than younger hunters to favor a blaze orange regulation ($P = 0.003$). Finally, males were 73.4% less likely than females to favor wearing blaze orange ($P < 0.001$). The model χ^2 was 63.18 (df = 4, $P < 0.004$) and the goodness-of-fit statistic was 2186.25 (df = 2164). The pseudo-R^2 was 0.3737, and was significant at predicting whether or not a respondent would favor or oppose wearing blaze orange.

Most (81%) respondents disagreed that baiting should be legalized during the spring turkey hunting season and 5 variables entered the model (Table 3). Hunters with more turkey hunting experience were 2.3% more likely than those with less experience to favor baiting ($P = 0.001$). Hunters who harvested or attempted to harvest a turkey over bait were 90.8% more likely than nonviolators to support baiting ($P < 0.001$). Hunters who harvested or attempted to harvest a hen during the gobblers-only season were 70.4% more likely to support legalized baiting than nonviolators ($P = 0.01$). Hunters who harvested or attempted to harvest a turkey on the roost were 56.3% more likely than those who did not to support legalized baiting ($P < 0.001$). Finally, hunters who felt turkey hunting was more important to them were 33% less likely to favor legalized baiting ($P < 0.001$). The model χ^2 was 130.47 (df = 5, $P < 0.001$) and the goodness-of-fit statistic was 2167.72 (df = 21.80). The pseudo-R^2 was 0.4695, and this model was significant at predicting a respondent's view toward legalized baiting.

Thirty-nine percent and 58% of respondents favored and opposed, respectively, a state-wide fall either-sex turkey hunting season (FESH). Five variables that were significant at predicting the respondents attitude toward a FESH entered the model

Table 1. Summary statistics for 10 significant independent variables used to predict turkey hunter attitudes toward 3 potential regulation changes in Mississippi, 1994.

Variable	% respondents	Valid cases
1. Harvest or attempt to harvest turkey over bait		
a. Yes	2.2	50
b. No	97.8	2,186
2. Harvest or attempt to harvest a hen		
a. Yes	0.9	21
b. No	99.1	2,215
3. Harvest or attempt to harvest a turkey with a rifle		
a. Yes	2.3	52
b. No	97.7	2,184
4. Harvest or attempt to harvest turkey on the roost		
a. Yes	4.4	99
b. No	95.6	2,137
5. How important turkey hunting is to respondent		
a. Not important	10.5	235
b. Important	41.3	924
c. Very important	47.1	1,054
6. Gender		
a. Male	97.1	2,172
b. Female	1.8	41
7. Type of area where respondent was raised		
a. Farm	39.1	863
b. Country (non-farm)	22.1	487
c. Town (<10,000 people)	14.3	315
d. Small city (10,000–50,000)	15.2	336
e. Medium city (50,000–100,000)	3.2	71
f. Large city (> 100,000)	6.0	133
8. How often respondent turkey hunted		
a. 1 day	4.2	93
b. 2 to 5 days	24.8	555
c. 6 to 10 days	21.2	475
d. 11 to 15 days	15.1	338
e. 16 to 20 days	10.9	244
f. > 20 days	12.7	283
9. Years of turkey hunting experience	10[a]	2,236
10. Age	40[a]	2,236

[a]Indicates median response for continuous variable.

(Table 4). Hunters with more turkey hunting experience were 2% less likely than those with less experience to favor a FESH ($P < 0.001$). Hunters who harvested, or attempted to harvest, a turkey with a rifle (illegal in Mississippi in the spring hunt) were 60.5% more likely than non-violators to favor a FESH ($P = 0.002$). Hunters who felt turkey hunting was more important to them were 38.2% less likely to favor a FESH ($P < 0.001$). The area where a hunter was raised was also a significant predictor of respondent attitudes toward a FESH ($P = 0.06$). Those raised on a farm,

Table 2. Logistic regression results for model 1: How the respondent felt about being required to wear blaze orange during the spring turkey hunting season in Mississippi in 1994 (strongly agree and agree = 1, and strongly disagree and disagree = 0).

Variable	β	SE	Exp(β)	Summary statistics[a] Support	Oppose
1. How important turkey hunting is to respondent (1) = not important, 3 = very important)	−0.6410**	0.1063	0.5268	2.10	2.40
2. Age	0.0193*	0.0065	1.0194	43.33	40.76
3. Gender (male = 1, female = 0)	−1.3230**	0.3716	0.2663	0.95	0.99
4. Harvested or attempted to harvest a hen during the spring turkey season (no = 1, yes = 0).	−1.3656*	0.5001	0.2552	0.03	0.01
5. Constant	1.0024	0.7017			

*Significant at $P < 0.01$.

**Significant at $P < 0.001$.

[a]Indicates mean response for those who support and oppose wearing blaze orange, respectively.

Table 3. Logistic regression results from model 2: How the respondent felt about legalizing baiting for turkey hunting in Mississippi in 1994 (strongly agree and agree = 1 and strongly disagree and disagree = 0).

Variable	β	SE	Exp(β)	Summary statistics[a] Support	Oppose
1. Years of turkey hunting experience	−0.0220**	0.0068	0.9782	10.16	12.57
2. Harvested or attempted to harvest a turkey over bait (no = 1, yes = 0).	−2.3842***	0.3252	0.0922	0.09	0.01
3. Harvested or attempted to harvest a hen (no = 1, yes = 0).	−1.2185*	0.4819	0.2957	0.03	0.01
4. Harvested or attempted to harvest a turkey on the roost (no = 1, yes = 0).	−0.8287***	0.2380	0.4366	0.09	0.03
5. How important turkey hunting is to the individual.	−0.4028***	0.0869	0.6685	2.20	2.41
6. Constant	3.9541***	0.6327			

*Significant at $P < 0.05$.

**Significant at $P < 0.01$.

***Significant at $P < 0.001$.

[a]Indicates mean response for those who support and oppose legalized baited, respectively.

in the country, or in a small city were 25.5%, 13.4%, and 21.0%, respectively, less likely than those who lived in a large city to favor a FESH. However, those who lived in a small or medium city were 9.8% and 14.6%, respectively, more likely to favor a FESH than those in a large city. Finally, hunters who hunted more days were 8.7% less likely than those that hunted fewer days to favor a FESH. The model χ^2 was 166.99 (df = 9, $P < 0.001$) and the goodness-of-fit statistic was 2161.78 (df = 2148).

Table 4. Logistic regression results for model 3: Should there be a state-wide fall either-sex turkey hunting season in Mississippi (yes = 1 and no = 0).

Variable	β	SE	Exp(β)	Summary statistics[a] Support	Oppose
1. Years of turkey hunting experience	−0.0235***	0.0052	0.9768	10.40	13.32
2. Harvested or attempted to harvest a turkey with a rifle (no = 1, yes = 0).	−0.9276**	0.3032	0.3955	0.04	0.01
3. How important turkey hunting is to the individual.	−0.4819***	0.0822	0.6176	2.19	2.50
4. Whre the respondent was raised	*			2.54	2.30
a. Farm	−0.2944	0.1975	0.7450		
b. Country (non-farm)	−0.1443	0.2074	0.8656		
c. Town (<10,000 people)	−0.2356	0.2197	0.7901		
d. Small city (10,000 to 50,000)	0.0935	0.2166	1.0980		
e. Medium city (50,000 to 100,000)	0.1363	0.3083	1.1460		
5. Number of days turkey hunted	−0.0917**	0.0312	0.9124	2.72	3.38
6. Constant	2.3542	0.3830			

*Significant at $P < 0.10$.

**Significant at $P < 0.01$.

***Significant at $P < 0.001$.

[a]Indicates mean response for those who support and oppose a state-wide fall either-sex turkey hunting season, respectively.

The pseudo-R^2 was 0.5593. This model was significant at predicting whether or not a turkey hunter would favor or oppose a FESH.

Discussion

Most (89%) turkey hunters were opposed to a regulation that required them to wear blaze orange while turkey hunting. Variables significantly associated with this regulation were gender, age, importance of turkey hunting, and poaching a hen, making it difficult to write a regulation to appeal to hunters with varied demographics and attitudes. In a survey of Mississippi turkey hunters in 1993 of slightly different design, most (66%) respondents opposed mandatory use of hunter orange (Godwin, unpubl. data). Witter et al. (1982) reported that turkey hunters in Missouri did not favor displaying hunter orange while hunting. Surveys in other states also reported strong (82.3% in Missouri, 88.2% in Arkansas) opposition to mandatory use of hunter orange (Vangilder et al. 1990, Cartwright and Smith 1990). Use of hunter orange may improve turkey hunting safety but hunters were found to be less successful in harvesting a gobbler (Vangilder et al. 1990). Even the use of hunter orange while walking was acceptable to a minority (25%) of turkey hunters in Virginia (Ericksen et al. 1985). Another potential safety regulation would be to require hunters to place harvested gobblers in an orange bag to carry the gobbler to the hunter's vehicle. Porath et al. (1980) found that 91.0% of surveyed hunters favored the required use of orange during deer seasons.

Feeding corn to white-tailed deer (*Odocoileus virginianus*) and wild turkeys is

a common practice in the Southeast. Hurst (1996) has documented that hen turkeys died from fungus (*Aspergillus* spp.) contaminated corn in Mississippi. In addition, legal and illegal baiting is currently a matter of great concern among sportsmen, wildlife managers, wildlife agencies, and anti-hunting organizations (Priest 1996). A regulation that permitted baiting for turkey hunting would be strongly (81%) opposed by turkey hunters in Mississippi. However, turkey hunters who admitted to violating current regulations (i.e., shot turkeys over bait, harvested a hen) were more likely than nonviolators to favor baiting.

Fall either-sex turkey hunting (FESH) is permitted in several southeastern states (M. Kennamer, Natl. Wild Turkey Fed., Edgefield, S.C., pers. commun.). For example, South Carolina initiated a limited FESH in 1981, increased the number of counties that allowed the hunt, then closed the season in 1992 because of a major decline in turkey numbers. Alabama has a restricted fall hunting season, gobblers only, private land only, and only in 6 counties. In Mississippi, a FESH is permitted on large, private hunting clubs in parts of 7 counties located in the MIssissippi Delta region. A FESH is a tradition in some states (e.g., West Virginia, Virginia) and turkey hunters would be expected to favor a FESH in these states. Impacts of a FESH on turkey populations have been studied in several states (Lobdell et al. 1972, Weaver and Mosby 1979, Williams 1988, Little et al. 1990), but this issue is related to hunter opinion as well as population dynamics.

Other than large hunting clubs along the Mississippi River, there is no tradition of a FESH in Mississippi. The fact that 39% of the hunters favored a FESH indicates a sizable minority wants such a hunting season. When the turkey population and annual harvest in Mississippi were increasing rapidly, turkey hunters, managers, and wildlife administrators discussed a FESH. The restored turkey population peaked at an estimated 400,000 birds in 1987 and then declined the next 4 years (Hurst 1995). It may be fortunate that a FESH was not permitted because it might have been seen as the cause of the decline and managers could have lost credibility. If the turkey population recovers to the 1987 level, managers should remember that 39% of turkey hunters desire a FESH in Mississippi. It is interesting that hunters who harvested or attempted to harvest a turkey with a rifle were more likely than non-violators to favor a FESH. Hunting turkeys with a rifle is illegal in the spring but is legal in the limited FESH in Mississippi. While the majority of turkey hunters in Mississippi were opposed to a FESH, managers should anticipate added interest in a FESH if the turkey population recovers to 1987 levels.

While surveys provide an excellent source of hunter attitudes and characteristics, this survey had 3 problems that need to be addressed. First, the sample of sportsman's license holders may have been biased. In 1994, 24.2% (51,111) of hunters purchased a sportsman's license, which represents a wide cross-section of hunters in Mississippi. However, bias may be present related to socio-economic class because the higher cost may preclude some individuals from purchasing the sportsman's license. Income and education are 2 important factors of socio-economic class, but neither were present in our models. This supports that socio-economic class does not help predict attitudes of regulations or that we sampled a relatively homogeneous group of hunters.

We sampled sportsman's license holders because they were the only ones with names and addresses accessible by computer. Second, no attempt was made to quantify non-response bias. Researchers should keep track of when surveys were received relative to the initial mailing to see if responses change over time or with additional mailings. Finally, we did not attempt to measure truthfulness by asking known violators about their hunting activity. Violations of hunting regulations were present in each model, which may indicate a propensity for violators to oppose regulation changes that may result in fewer opportunities to harvest a turkey or favor regulation changes which will increase opportunities to harvest a turkey. It would be useful to know the attitudes of known violators so they may separated from non-violators and the appropriate management decision be made based on the attitudes of true sportsmen and women.

Surveys provide wildlife managers with pertinent information, and a more complete and proactive program, including potential regulations, can be planned and executed. With directed educational programs, acceptance and compliance of new regulations should be greater if attitudes of the user group are considered during planning. Involvement of turkey hunters is crucial to the success of any turkey management program. Wildlife agencies that annually collect hunter harvest/effort information can include questions regarding attitudes towards regulations and pertinent issues (e.g., Pack et al. 1995). Surveys can provide a link between management agencies and wildlife user groups.

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