

# Hunter Response to Road Closures for Walk-in Turkey Hunting

**David E. Steffen**, *Mississippi Department of Wildlife Conservation, P.O. Box 451, Jackson, MS 39205*

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

**William E. Smith**, *Mississippi Department of Wildlife Conservation, P.O. Box 451, Jackson, MS 39205*

**William J. Hamrick**, *Mississippi Department of Wildlife Conservation, P.O. Box 451, Jackson, MS 39205*

---

*Abstract:* The quality of spring hunting for eastern wild turkey (*Meleagris gallopavo silvestris*) gobblers may decline with increased road access. A questionnaire mailed to turkey hunters assessed response to road closures for walk-in hunting on a Mississippi wildlife management area during spring 1986. Because hunters felt road closures improved hunting quality and reduced interference from other hunters, they strongly supported (92%) walk-in turkey hunting. Hunters who disapproved of road closures were significantly older than those who approved. Hunter involvement in the road closure decision likely was important to its success.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 42:382-387

---

An excess of roads may be detrimental to eastern wild turkey (*Meleagris gallopavo silvestris*) populations through increases in human use and disturbance (Bailey and Rinell 1968, Bailey et al. 1981). Increases in hunting mortality have been associated with extensive road access (Holbrook and Vaughan 1985, Holbrook et al. 1985). Vehicular traffic also may be responsible for changes in home range (Raybourne 1968, Wright and Speake 1975).

In addition to influencing turkey mortality and behavior, increases in road access may facilitate increases in hunter densities and crowded conditions. Increased hunter opportunity and crowding may lead to reduced turkey hunting quality (Madson 1975). Although high hunter density did not reduce turkey hunting quality in Maryland (Vaske and Donnelly 1980), it decreased hunter satisfaction in Ohio (Donohoe and McKibben 1973) and Michigan (Hawn et al. 1987).

Road closures in Mississippi National Forests and Department of Wildlife

Conservation (DWC) wildlife management areas (WMA) have been used to decrease human disturbance to nesting wild turkey hens. A new road closure regulation promoting walk-in turkey hunting was implemented on a DWC wildlife management area in an attempt to improve spring turkey hunter satisfactions. This study was conducted to determine hunter acceptance of walk-in turkey hunting.

The study, as part of the Mississippi Cooperative Wild Turkey Research Project (MCWTRP), was funded by the Mississippi DWC through the Federal Aid in Wildlife Restoration Project W-48. We gratefully acknowledge K. J. Gribben, E. J. Hackett, R. L. Kelley, and P. S. Phalen for their assistance.

## **Methods**

The study was conducted on a 6,950-ha portion of Tallahala WMA (11,380 ha), Bienville National Forest, in central (Jasper County) Mississippi. During the 1986 spring turkey hunting season (22 Mar–1 May) the Mississippi DWC, in conjunction with the U.S. Forest Service, reduced open-road density from 6.0 km/1,000 ha to 3.2 km/1,000 ha by closing 18.9 km of the 41.4 km of all-weather roads on Tallahala WMA. Flexible plastic stakes with an attached sign, "Turkey Hunting Walk-In Area, Closed to Motor Vehicles and Motorized Equipment," were placed on both sides of the road at the closure point. No road was completely blocked with a gate or other structure.

Before each day's hunt, all turkey hunters were required to pick up a daily hunting permit card. At the end of the day, hunters deposited the card in a self-serve check-in station. In addition to harvest information, the hunter's name and address were recorded on the card. To assess response to road closures, all turkey hunters were mailed a single-page questionnaire with a business-reply envelope on 28 May 1986. No follow-up reminder mailings were used.

The relationship between hunter approval and categorical variables (e.g., success and Tallahala WMA hunting experience) was examined by Fisher's exact probability test (Seigel 1956). Differences between road closure acceptance response groups in hunter age and days hunting on Tallahala WMA were tested with Wilcoxon's rank-sum test (Hollander and Wolfe 1973). Total turkey hunting man-days and its standard error (without using the finite population correction) were estimated from questionnaire responses by the simple random sampling techniques described by Cochran (1977).

## **Results**

Based on check-in cards, 192 turkey hunters were mailed a questionnaire; 5 were returned as nondeliverable. Usable responses were received from 127 hunters, resulting in a response rate of 68%.

The average turkey hunter on Tallahala WMA was 36 years old and spent nearly 6 days hunting on the area (Table 1). The questionnaire response indicated that 1,133 man-days (SE = 96) were spent turkey hunting on the study area portion

**Table 1.** Hunter characteristics associated with response to road closures for turkey hunting on Tallahala Wildlife Management Area, Mississippi, during spring 1986.

Road closure opinion	Age (years)			Days hunted			Success		First year hunters	
	$\bar{x}$	SE	<i>N</i> <sup>a</sup>	$\bar{x}$	SE	<i>N</i>	%	<i>N</i>	%	<i>N</i>
Approve	35.0	1.2	115	6.0	0.5	113	26	115	35	117
Disapprove	47.4	5.9	10	4.9	1.0	9	10	10	10	10
Total	36.0	1.2	125	5.9	0.5	122	25	125	33	127

<sup>a</sup>*N* = total number of respondents by road closure opinion category who answered each question.

of Tallahala WMA. Based on a count of total check-in cards, only 480 man-days were spent turkey hunting on the study area during the 1986 spring season. Hunter success was 25%. One-third of the hunters had not hunted on Tallahala WMA prior to the 1986 season (Table 1).

Most turkey hunters approved (92%) of the road closures for walk-in hunting and nearly 50% would have liked even more roads closed. Two-thirds of the hunters indicated that road closures improved the quality of turkey hunting on Tallahala WMA. Hunters reported fewer disturbance and competition problems from other turkey hunters when comparing their experience of previous seasons (Table 2).

No significant associations were found between hunter acceptance of road closures and success ( $P = 0.45$ ), days hunted ( $P = 0.81$ ), or years hunted ( $P = 0.16$ ) on Tallahala WMA (Table 1). Hunters who approved ( $\bar{x} = 35.0$  years old) of road closures were significantly ( $P = 0.01$ ) younger than those who disapproved ( $\bar{x} = 47.4$  years old).

## Discussion

Turkey hunting effort based on a direct count of study area check-in cards (480 man-days) was less than half the estimate derived from the questionnaire (1,133 man-days). Noncompliance with the check-in card system would lead to an underestimate of hunting pressure. Response and nonresponse biases probably exaggerated questionnaire results (Filion 1980). Although the actual amount of turkey hunting effort was probably between the 2 estimates, either method should provide an acceptable index of hunting pressure.

Based on an index of total check-in cards, hunting pressure on Tallahala WMA was typical of other Mississippi WMAs. With a count of 523 check-in cards for the entire area (Miss. Dep. Wildl. Conserv. 1986), Tallahala WMA had an average index of 1.12 hunters/1,000 ha for each day of the 41-day turkey season. The average hunting pressure index for 18 other Mississippi WMAs using the check-in card system was 0.99 hunters/1,000 ha/day (range = 0.14–2.81) (Miss. Dep. Wildl. Conserv. 1986).

Road closures for spring turkey hunting were accepted overwhelmingly by Tal-

**Table 2.** Hunter opinions associated with road closures for turkey hunting on Tallahala Wildlife Management Area, Mississippi, during spring 1986.

Opinion	Response (%)	N <sup>a</sup>
Feeling about road closures:		
Approve	92	
Disapprove	8	127
No opinion	0	
Hunters wanted:		
More roads closed	48	
Fewer roads closed	7	126
Same amount closed	45	
If hunted $\geq 2$ years, road closure affect on quality:		
Decreased quality	7	
Improved quality	66	85
No change in quality	27	
If hunted $\geq 2$ years, change in hunter disturbance:		
More hunter problems	15	
Fewer hunter problems	64	83
No change in problems	22	

<sup>a</sup>N = total number of respondents to each question.

lahala WMA hunters. Although hunting pressure was similar, care should be taken when extending these results to other public areas. Because of the high profile of the MCWTRP on Tallahala WMA, there was a solid foundation of public cooperation and communication that may not exist on other public hunting areas. As part of the MCWTRP, turkey hunters interacted routinely with Mississippi State University and DWC personnel. The relatively high response rate (68%) to a single-mailing survey provided added evidence of the uniqueness of Tallahala turkey hunters. Typical response rates were only about 27% after 1 mailing in similar surveys to Mississippi hunters (Steffen 1981).

As with any change in policy, road closures for walk-in hunting would be most successful with public involvement. However, no formal mechanism (e.g., public hearings) was used to acquire public input prior to implementation. Instead, personal contact by Tallahala WMA personnel with hunters on a daily basis and at local meetings was highly effective in assessing sportsmen's reactions to walk-in turkey hunting. After interacting with WMA personnel for several years, hunters were not surprised when road access finally was restricted. Because of this communication, Tallahala WMA personnel expected the favorable hunter response.

Only hunter age was significantly different between groups of hunters who approved or disapproved of road closures. The older age of sportsmen disapproving of road closures may reflect an unwillingness or inability by these hunters to walk greater distances. Although not significant, there was a tendency for hunters who

hunted more, were more successful, and had no previous Tallahala WMA hunting experience to be more in favor of road closures.

Competition and disturbance among hunters during 1986 was less than that experienced during previous seasons despite a 21% increase in the check-in card index of turkey hunting effort on the entire area between 1985 (433 man-days) and 1986 (523 man-days) (Miss. Dep. Wildl. Conserv. 1986). Road closures may encourage a less offensive redistribution of turkey hunters. Restriction of vehicles may eliminate the direct disturbance of vehicular noise and the increased potential of new hunters encroaching on hunters already in the woods. Although hunter density actually increased, hunter-associated problems (either real or perceived) were reduced with walk-in turkey hunting.

Hunters indicated that road closures (and presumably reduced hunter disturbance) during the 1986 season improved the quality of turkey hunting when compared to past seasons. Other elements, especially gobbling activity, may be more important in providing hunter satisfactions (Hawn et al. 1987). Since gobbling activity on Tallahala WMA was significantly greater during 1986 than during 1985 (Gribben 1986), improvements in hunting quality attributed to road closures may be confounded with the increase in gobblers heard.

Turkey hunters who encounter turkeys (i.e., heard them) are more likely to be disturbed by the presence of other hunters (Hawn et al. 1987). Especially in areas (or years) with good gobbling activity, any attempt to reduce hunter conflicts could result in more satisfied hunters. In areas with a low likelihood of seeing or hearing turkeys, hunter disturbance has little impact on hunt quality (Hawn et al. 1987) and road closures may not improve hunting satisfactions. Continued assessment of road closures in other years or areas, involving a wide range of gobbling activity, should help identify the real contribution of road closures to hunter satisfaction.

## Literature Cited

- Bailey, R. W., J. R. Davis, J. E. Frampton, J. V. Gwynn, and J. Shugars. 1981. Habitat requirements of the wild turkey in the southeast Piedmont. Pages 14–23 in P. T. Bromley and R. L. Carlton, eds. *Proceedings of the symposium on habitat requirements and habitat management for the wild turkey in the southeast*. Va. Wild Turkey Fed., Richmond.
- and K. T. Rinell. 1968. History and management of the wild turkey in West Virginia. W. Va. Dep. Nat. Resour., Div. Game and Fish Bul. 6., Charleston. 59pp.
- Cochran, W. G. 1977. *Sampling techniques*, 3rd ed. John Wiley and Sons, New York. 428pp.
- Donohoe, R. W. and C. E. McKibben. 1973. Status of wild turkey in Ohio. Pages 25–33 in G. C. Sanderson and H. C. Schultz, eds. *Wild turkey management: current problems and programs*. Univ. Mo. Press, Columbia.
- Filion, F. L. 1980. Human surveys in wildlife management. Pages 441–453 in S. D. Schemnitz, ed. *Wildlife management techniques manual*, 4th ed. The Wildl. Soc., Washington, D.C.

- Gribben, K. J. 1986. Population estimates for the wild turkey in east-central Mississippi. M.S. Thesis, Miss. State Univ., Miss. State. 95pp.
- Hawn, L. J., E. E. Langenau, Jr., and T. F. Reis. 1987. Optimization of quantity and quality of turkey hunting in Michigan. *Wildl. Soc. Bul.* 15:233-238.
- Holbrook, H. T. and M. R. Vaughan. 1985. Influence of roads on turkey mortality. *J. Wildl. Manage.* 49:611-614.
- , ———, and P. T. Bromley. 1985. Wild turkey management on domesticated pine forests. *Proc. Natl. Wild Turkey Symp.* 5:253-258.
- Hollander, M. and D. A. Wolfe. 1973. *Nonparametric statistical methods.* John Wiley & Sons, Inc., New York. 503pp.
- Madson, J. B. 1975. The crowd goes turkey hunting. *Proc. Natl. Wild Turkey Symp.* 3:222-227.
- Miss. Dep. Wildl. Conserv. 1986. Mississippi Department of Wildlife Conservation wildlife management areas harvest summary report, 1985-86. *Miss. Dep. Wildl. Conserv. Annu. Rep., Fed. Aid. Proj. W-49-32,* Jackson. 119pp.
- Raybourne, J. W. 1968. Telemetry of turkey movements. *Proc. Annu. Conf. Southeast. Assoc. Game and Fish Comm.* 22:47-54.
- Siegel, S. 1956. *Nonparametric statistics for the behavioral sciences.* McGraw-Hill Book Co., New York. 312pp.
- Steffen, D. E. 1981. Mississippi mail survey of game harvest and hunter effort for 1980-81. *Miss. Dep. Wildl. Conserv. Annu. Rep., Fed. Aid. Proj. W-48-28, Job VI-1,* Jackson. 87pp.
- Vaske, J. J. and M. P. Donnelly. 1980. Hunter attitudes toward wild turkey management in Maryland. *Univ. Md., Agric. Exp. Sta. Rep. A2766,* College Park. 34pp.
- Wright, G. A. and D. W. Speake. 1975. Compatibility of eastern wild turkey with recreational activities at Land Between the Lakes, Kentucky. *Proc. Annu. Conf. Southeast. Assoc. Game and Fish Comm.* 29:578-584.