October 1993

DEER DAMAGE IN TENNESSEE: LANDOWNER PERCEPTIONS AND ATTITUDES

Michael M. King
University of Tennessee

DEER DAMAGE IN TENNESSEE: LANDOWNER PERCEPTIONS AND ATTITUDES

MICHAEL M. KING, Department of Forestry, Wildlife and Fisheries, The University of Tennessee, Knoxville, TN 37901-1071.

Key words: White-tailed deer, damage, landowner perceptions, attitudes, Tennessee

Proc. East. Wildl. Damage Control Conf. 6:155-159. 1995.

White-tailed deer (*Odocoileus virginianus*) are an important resource for Tennesseans. They are enjoyed by consumptive and nonconsumptive users alike. Approximately 190,000 hunters pursued deer during the 1992-93 hunting season in Tennessee. They successfully harvested 126,999 deer (Greg Wathen, TWRA Assistant Chief of Wildlife, pers. commun.) and it has been estimated that these hunters would have spent approximately $125 million on goods and services related to deer hunting (Whitehead 1991).

Tennessee's white-tailed deer population has dramatically increased in this century, particularly since the 1970's (Tennessee Wildlife Resources Agency 1992). In the early 1900's, deer numbers were at an all time low. The statewide estimate was 1000 or less. However, a combination of regulated hunting, reintroduction programs from the mid-930's through the mid-1980's, and favorable agricultural and forestry practices, has resulted in population growth and expanded range (Tennessee Wildlife Resources Agency 1991). The Tennessee Wildlife Resource Agency (TWRA) now estimates Tennessee's deer herd to be close to 800,000 (Greg Wathen, TWRA, pers. commun.) and growing.

This trend is common throughout the eastern United States (Witmer and deCalesta 1992, Sayer and Decker 1989, Downing 1987, Decker and Gavin 1985, Scott and Townsend 1985). Associated with the rise in deer numbers are increases in the number of deer hunters, deer harvested and deer damage complaints by landowners (Tennessee Wildlife Resources Agency 1990). Complaints come from row-crop farmers, nurserymen, orchardists, homeowners and vehicle operators concerned about deer on Tennessee highways. Yet to surface as a major complaint in Tennessee is the inhibition of natural regeneration of forests because of over-browsing by deer. However, other eastern states like Massachusetts, New York, Pennsylvania and others are currently experiencing such problems Parkhurst and O'Connor 1992, Winchcombe 1992, Witmer and deCalesta 1992, Tilghman 1983).

A survey of farmers in three west Tennessee counties conducted by the University of Tennessee in 1983 (Tanner and Dimmick 1983) indicated that most (62%) enjoyed having some deer on their property, despite real or potential damage. At that time, 73% of the farmers indicated that they would like to see deer populations increase or remain at the same levels (38% remain same, 35% increase) while 28% indicated they would like to see a decrease. only 10% of the farmers said the damage by deer was intolerable.

In 1986, Tennessee Farm Bureau conducted an informal survey of their members to get their opinions on wildlife damage problems. The survey was included in the Farm Bureau Newspaper. Members were asked to fill the survey out and return to the TFB office. Only about 300 members responded to the survey. Although the survey was not designed for statistical validation, the responses are of interest. Deer were listed as the major wildlife problem by 61% of the respondents. When asked about which wildlife species was having the most serious economic impact, deer were ranked second behind heavers. When asked if they had reported the damage, less than 30% had actually reported it to either Tennessee Wildlife Resources Agency (TWRA) or The University of Tennessee Agricultural Extension Service (UTAES). Though the TFB survey didn't address problems associated with hunters and hunting specifically, 46 returned questionnaires had comments indicating hunters caused more problems than did wildlife (Rhedonna Rose, Tennessee Farm Bureau Research Analyst; pers. commun.).

No systematic effort has been made to evaluate landowners perceptions and attitudes about the deer population and damage since Tanner and Dimmick's effort in 1983. In light of the increase in deer population and seemingly increasing number of deer damage complaints, this survey was designed to determine current landowner perceptions about deer damage problems for the entire state.

I wish to thank the Tennessee Wildlife Resources Agency Wildlife-Wildlife Management Division for providing funding for this study. Also Julius Johnson and Rhedonna Rose from Tennessee Farm Bureau were most helpful. Tennessee Farm Bureau provided names and mailing labels from their membership to whom survey questionnaires were mailed. Dr. Randol Waters, Associate Professor, The University of Tennessee, Department of Agricultural and Extension Education, provided helpful insight into survey design and computer analyses. Rick Eastridge, wildlife student in The University of Tennessee's Forestry, Wildlife and Fisheries, entered data for computer analyses. Betty Perrin and Sherry Morton typed the manuscript. Special thanks goes to all survey participants. Their willingness to participate and their insightful responses have provided important information to Tennessee's deer managers.

METHODS

A mail survey was conducted to determine feelings of landowners throughout the state. Study methods are based on a protocol for mail surveys outlined by Dillman (1978) and Sawer (1984). The participant list, obtained from TFB, was generated by selecting every 30th name from an alphabetized list of voting members of TFB. Voting membership of TEE consists of approximately 80,000 members. A second questionnaire was mailed to participants who did not respond within two weeks after the initial mailing. Questionnaires were sent to approximately 2960 Tennessee landowners. The survey instrument used was similar to the questionnaire developed by Brown et al. (1980) for a similar survey in New York.

RESULTS

A total of 2960 surveys were mailed to Tennessee landowners. Of that total, 102 were returned uncompleted and 76 were returned because they were undeliverable. A total of 1182 returned completed questionnaires for a useable response rate of 42%.

Summary of Statewide Responses

Survey results suggest that the most common perception among Tennessee landowners is that during the last five years the white-tailed deer population has increased. Over 43% of survey respondents indicated that they felt there are more deer now than five years ago. However, in spite of the general agreement that the deer population has increased, less than 20% of the respondents indicated that there was more damage now than five years ago.

When asked about amount of damage they had experienced from deer during the last year, 67.3% answered that they had experienced no damage while 32.6% incurred some damage (18.3% experienced light damage, 8.6% moderate damage, 3.7% substantial damage and 2% severe damage). Of those landowners that bad experienced some damage, only 12.6% felt the damage was unreasonable. A majority of the respondents with damage felt the damage was negligible (44.0%) or tolerable (43.4%).

The general feeling of landowners toward deer was favorable. Sixty-two percent of survey respondents indicated that they considered deer to have aesthetic value and liked to have them around. Slightly more than 12% indicated that they enjoyed deer but worried that they might cause damage to their crops. Only 9.5% felt like deer were a nuisance.

When asked to make recommendations to TWRA for managing the deer population level in their county, the most common response was leave the population level at its current level (45.1%). Over 33% indicated that they would like to see a population increase, while 21.7% suggested the populations should be decreased.

Perceptions of deer damage based on land use category

Comparisons of opinions about deer and deer damage were made between the various land use categories (primary land uses indicated by landowners; e.g., livestock, nursery, small fruits, row crops, etc.). Generally, most landowners, regardless of land use category indicated that there are more deer now than five years ago. Three groups that seemed to be particularly sensitive to the damage trend during the past five years were vegetable growers, grain growers and nursery stock growers. Nearly 40% of each of these groups indicated that there is more damage now than five years ago. The same three groups were more likely to suggest they received some type of damage during the past year than other groups and were more likely to feel that the amount of damage was unreasonable. These three groups also tended to have more negative feelings about deer.

When asked about management of deer population levels, the most common response from almost all groups was to leave populations at current levels. However, more vegetable growers, grain growers and nursery stock growers tended to favor decreases in population levels than in other groups.

Summary of landowners efforts to control deer damage problems

Survey results indicate that Tennessee landowners currently do little to control deer damage to crops. Only 5.8% of landowners that experienced damage by deer actually sought some kind of assistance. Those that did seek assistance directed their complaints primarily to TWRA and UTAES. Only 14.3% of those that bad deer damage actually took steps to control damage to their crops or property. This failure to attempt control methods may result from most landowner's perception that damage was negligible or tolerable or lack of confidence in damage reduction techniques. A majority of landowners rated all methods as either very ineffective or ineffective. Electric fencing (26.4% rated as very effective or effective) and chemical repellents (22.2% rated as very effective or effective) appear to have the highest approval rating of any of the control methods. The most commonly used control methods were scare devices (31%), electric fencing (29%) and chemical repellents (12.9%). Only 0.9% of those landowners that had experienced damage sought special kill permits from TWRA.

Hunting as a damage reduction technique was only reported by 11 respondents. Their opinions about its effectiveness were mixed. Three landowners reported hunting as very effective and one reported hunting as effective. However, three respondents reported hunting as very ineffective. Three also were undecided about its effectiveness. One respondent did not rate hunting's effectiveness as a control technique.

A majority of the responding landowners do not hunt. Only 19.4% of the respondents hunted during the past year.

Another 10% said they hunt, but did not hunt in the last year. Nearly 71% said they do not hunt. This trend is similar for landowners that experienced deer damage as well as those that did not.

Slightly over 29% of landowners indicated that they posted their property during the last year. Important reasons indicated by respondents include wanting to know who uses their property (38.6%), wanting to reserve land for family hunting (20.2%), past problems with hunters (20.2%) and liability concerns (9.5%).

When asked which groups of people they would allow to hunt on their property, 46.8% of the landowners said they would let family members hunt and 52.5% indicated they would allow friends and neighbors to bunt. Only 12.1% said they would allow strangers that get permission to hunt and 23.9% said they would not allow anyone to hunt on their property. About 3% said they would allow paying customers to hunt.

DISCUSSION

This survey indicates that a majority of responding landowners had favorable feelings towards deer. It is also evident that a majority of the landowners who responded to the survey, are not having major problems with deer. However, farmers that grow particularly sensitive crops, e.g. row crops and nursery stock, or with farms located in areas with high deer populations may have problems. Fifteen landowners estimated a 100% crop loss during the last year and three individual landowners indicated they had losses of more than $10,000.00 each during that time period.

It is also apparent that landowners that experience damage are currently doing little to correct their problems. Few seek help or take steps to reduce damage. Few hunt themselves and few open land to deer hunting to groups other than family and friends. This has the potential to limit deer harvest in areas where more is needed. One of the main reasons landowners restrict access to their property by posting is because they have had bad experiences with hunters in the past.

These factors coupled with a growing deer population, stabilized numbers of deer hunters, and annual reduction in proportion of total deer herd harvested (even though total number of deer harvested generally increases) sets the stage for potentially more serious problems in the future.

The popularity of deer with recreationists coupled with their potential to cause considerable economic losses to landowners creates a management dilemma for TWRA and landowners in Tennessee. Deer management is further complicated since the deer resource is owned by all Tennesseans, utilized by a minority (approximately 400,000 hunters and wildlife observers), managed by a public agency - TWRA, and fed primarily with natural foods or agricultural crops grown on lands held in private ownership. Cooperative efforts should be made to come up with solutions that will help alleviate serious problems landowners are experiencing and yet satisfy the recreational demands of the public when possible.

Landowners as a group need to take appropriate steps to reduce damage including more deer harvest on their property. Hunters and other recreationists need to exhibit and promote ethical behavior on private lands so landowners will welcome them on their property to harvest deer. TWRA needs to continue to be responsive to hunters' needs for hunting opportunities, but also to landowners' needs when serious deer damage or trespass problems arise.

LITERATURE CITED

Brown, T.L., D.J. Decker and D.L. Hustin. 1980. Farmer's tolerance of white-tailed deer in central and western New York. Search: Agriculture No. 7. Cornell Univ. Ag. Exp. Stn. Ithaca. 16pp.

Decker, D.J. and T.A. Gavin. 1985. Public tolerance of a suburban deer herd: implications for control. Proc. East. Wild. Damage Control Conf. 2:192-204.

Dillman, D.A. 1978. Mail and telephone surveys - the total design method. John Wiley & Sons, New York.

Downing, R.L. 1987. Success story: white-tailed deer. Pages 45-57 in H. Kallman, ed. Restoring America's wildlife 1937-1987. U.S. Fish and Wildlife Service, Washington D.C.

Parkhurst, J. A. and R.W. O'Connor. 1992. The Quabbin Reservation white-tailed deer impact management plan: a case history. Proc. East. Wild. Damage Control Conf. 5:173-181.

Sawer, B.J. 1984. Evaluating for accountability. Oregon State University Extension Service, Corvallis, Oregon. 120pp.

Sayer, R.W. and D.J. Decker. 1989. Extent and nature of deer damage to commercial nurseries in New York. Proc. East. Wild. Damage Control Conf. 4:162-172.

Scott, J.D. and T.W. Townsend. 1985. Deer damage and damage control in Ohio's nurseries, orchards and Christmas tree plantings. Proc. East. Wild. Damage Control Conf. 2:182-186.

Tanner, G.P. and R.W. Dimmick. 1983. Attitudes and perceptions of Tennessee farmers toward deer and deer crop damage. Tennessee Farm & Home Science 128:14-17.

Tennessee Wildlife Resources Agency. 1990. A strategic plan for wildlife resources management for the 1990's. Nashville, TN.

Tennessee Wildlife Resources Agency. 1991. Deer restoration in Tennessee, 1940-1985: a final report. TWRA Wildlife Research Report No. 91-1. Nashville, TN. 222pp.

Tennessee Wildlife Resources Agency. 1992. Big game harvest data and range surveys. TWRA Technical Report No. 92-3. Nashville, IN. 222pp.

Tilghman, N. 1983. Deer densities and forest regeneration. Proc. East. Wild. Damage Control Conf. 1:17.

Winchcombe, R.J. 1992. Minimizing deer damage to forest vegetation through aggressive population management. Proc. East. Wild. Damage Control Conf. 5:182-186.

Witmer, G.W. and D.S. deCalesta. 1992. The need and difficulty of bringing the Pennsylvania deer herd under control. proc. East. Wild. Damage Control Conf. 5:130-137.

Whitehead, C.J. 1991. Fisheries, small game, big game, migratory bird, and non-game program outputs. Tennessee Wildlife Resources Agency Planning Report 91-1. Nashville, TN. 26pp.