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**Turkey damage survey:
A wildlife success story becoming another wildlife damage problem**

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Abstract: Wild turkey (*Meleagris gallopavo*) populations have been restored and enhanced through introductions and reintroductions in 49 of the 50 states to huntable populations within the last 30 years. Populations are presently estimated to exceed 4 million birds within the United States. In many states, wild turkey habitat includes woodlots interspersed with agricultural lands, and some of the highest known population densities of wild turkeys are found in such areas. This paper will report on existing research, examining perceived versus actual damage caused by wild turkeys. It will also provide information based on a recent survey of biologists from the State Fish and Wildlife Agencies, State Cooperative Extension Service wildlife specialists, and United States Department of Agriculture Animal, Plant, Health Inspection Service Wildlife Services' personnel across the United States who receive reports of both perceived and actual damage by wild turkeys to a diversity of agricultural crops. It will attempt to examine the human dimensions aspect of landowners and managers toward thresholds of tolerance; the economic and recreational user benefits of maintaining high populations of wild turkeys which utilize a diversity of habitats including agricultural lands; and the values placed on recreational use and enjoyment of the wild turkey resource. It is expected that future interactions between wild turkeys and agricultural crops will continue as will efforts and alternatives to prevent damage, explore the tradeoffs, and resolve potential conflicts for the benefit of agricultural producers and the wild turkey resource.

Key words: agriculture, crops, damage, economic, perceived, real, restoration, values, wild turkeys, wildlife

Introduction/historical perspective

As an avid teenage hunter born in the early 1940's and raised on a farm in a state where there had always been a native wild turkey population in a few remote areas of the state, I only dreamed about the possibility of

someday having the opportunity to be able to hunt these great birds. In fact, it was not until I was a freshman in college in 1958 and had a chance to go home with my roommate that I enjoyed my first opportunity to hunt wild turkey. Not only was I fascinated with the wildness of the areas where turkeys were

found, I was hooked for life when I was fortunate enough to have a nice gobbler respond to my calling. I provide this brief personal background only to point out how fortunate we are today to have huntable wild turkey populations in every state across the United States except for Alaska.

Wild turkeys of several subspecies are among the many wildlife success stories in the United States over the past 50 years for which we should be grateful. These successes have occurred as a result of combining good science with learning from our mistakes, and having a strong constituency of both traditional customers and public support for the restoration, conservation, and management programs of natural resource management agencies. I applaud our predecessors for their insight, determination, and dedication, and am pleased to have been a participant and, hopefully, in a small way, a contributor to these remarkable wildlife restoration efforts on public and private lands.

However, as is the case with white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*), wild turkeys, and other wildlife species, whose populations have expanded significantly in recent years, we recognize that these and other species have the potential for damage to agricultural crops and to other amenities and resources. In a nationwide survey of agricultural producers about wildlife on their farms and ranches (Conover 1994), 80% of the respondents reported suffering some level of wildlife damage over the past year. Losses greater than \$500 annually to wildlife damage were reported by 54% of the respondents. Equally important, 24% of these respondents indicated they were reluctant to provide habitat for wildlife because of the severity of the damage.

It should be noted that in this survey, wild turkeys were not identified as a source of significant damage by any of the respondents.

When any wildlife population becomes large enough to expand their range, combined with the fragmentation of private land ownerships across the nation and the diversity of crops being produced, the likelihood increases that real or perceived damage will be reported.

Description of problems

Because of their diverse diet, flocking instinct, body size, behavioral patterns, and wide distribution across the United States, wild turkeys are obvious visitors to agricultural fields. Wild turkeys and a variety of other native and exotic wildlife species often utilize agricultural crop fields for food as well as other requirements. Some of the other species have nocturnal or crepuscular feeding habits. Wild turkeys are often observed in these fields because of their diurnal activity pattern and large size. Whether or not real crop damage by wild turkeys is occurring, there is concern by producers that if the birds are out there, some damage attributable to them must be occurring. In fact, crop damage by wild turkeys can and does occur. However, several research studies have indicated that the damage attributed to wild turkeys is often caused by other species using these fields which may not have been observed by the producer.

Perceived damage

A nationwide survey was conducted in 1999. This 20-question survey was developed by the Northeast Wild Turkey Technical

Committee at the request of the Northeast Wildlife Administrators along with input from the United States Department of Agriculture, The Wildlife Society, and the American Farm Bureau. This survey was forwarded to: all State Fish and Wildlife Agencies, all State Supervisors for the Animal and Plant Health Inspection Service-Wildlife Services Agency of the United States Department of Agriculture, and to all State Cooperative Extension Service Wildlife Specialists. I will not go into the description of questions asked on the survey, nor mechanics of the survey, in the interest of time and because this survey data is expected to be analyzed more completely and published in a paper to be presented later. The preliminary results of this survey of professionals who understand wildlife damage and have expertise in assessing damage caused by wildlife species, indicate that wild turkey populations in various states do, on occasion, cause significant damage to some crops. However, the actual damage caused by wild turkeys is significantly less than perceived damage in all states where on-site examinations have been conducted.

Actual damage

The questions to which respondents were asked to reply focused on obtaining information pertinent to complaints from producers received by state and federal agencies and educational institution wildlife professionals in each state. The purpose of the survey was to confirm, where possible, the extent of complaints about turkey damage; the wildlife species actually causing the reported damage attributed to turkeys; the type of crops depredated; the extent of confirmed damage over the past three years; the trend of reported damage attributed to wild turkeys; and the

estimated economic value of the states' wild turkey resource. Survey responses were received from 39 of the 50 states. A total of 170 professionals were surveyed with an average response rate of 36%.

Only two states reported estimated damage to agricultural crops of over \$10,000 annually. These two were New York, with an estimate of \$20-30,000, and Wisconsin, with over \$50,000.

Thirty-seven of the thirty-nine responding states indicated that complaints about wild turkey depredation were received by one or more of the agencies and institutions responding. Twenty-eight of the states confirmed that some level of damage was caused by wild turkeys to agricultural crops. Thirty-seven of the responding states reported that site evaluations had been conducted to determine whether crop damage had or had not actually occurred.

Twenty-eight of the states responded with estimates to the question regarding the percent of actual damage and confirmed that damage was caused by other species. Of these, nine reported that 0-25% was clearly caused by other species, five reported that 51-75% of the damage observed was clearly caused by species other than wild turkeys, and 14 of the states reported that 76-100% of the damage confirmed was caused by species other than wild turkeys.

The kinds of agricultural crops reported to have received confirmed damage from wild turkeys are listed on Table 1. Of the damage reported to the crops identified, the most extensive confirmed damage occurred to silage and to hay. Corn crops received some generally light damage and ginseng, because

of its high value, was probably the most expensive of the losses, even though damage was reported from only three states. Eight states did not identify the crops damaged but did quantify general crop damage as light.

Only three states reported turkey depredation complaints exceeding 25 per year, two of those states reported 25-50 complaints and one reported over 100. Of the 30 states responding to a question regarding trends in turkey depredation complaints over the past three years, seven said the trend of complaints was increasing, fourteen said the number appeared to be stable, seven said the number of complaints were decreasing, and two reported no complaints. Table 1. Confirmed Agricultural Crop Damage From Wild Turkeys.

Of the respondents, only 12 states provided estimates of the economic values of their wild turkey resource, ranging from \$130,000 to \$19,300,000. There is no clarification for how these estimates were obtained. Neither is it known if other states not reporting estimated values simply do not have estimates or were reluctant to report them. Further information on estimated values of the wild turkey resource will be provided elsewhere.

Turkey food habit studies and damage

A five-year study (1988-1993) study of wild turkey food habits and agricultural crops in southwestern Wisconsin found that during the crop growing seasons the diet of turkeys

Table 1. Confirmed Agricultural Crop Damage From Wild Turkeys.

Crops	Number of states reporting damage		
	<u>Light</u>	<u>Moderate</u>	<u>Heavy</u>
Apples	2		
Blueberries	3		
Coffee Seedlings	1		
Corn	5	1	
Flowers	1		
Ginseng	2	1	
Hay	2	1	1
Koa Seedlings	1		
Milo	1		
Oats	1	1	
Pasture Seeding			1
Residential Gardens	2	2	
Silage	8	8	6
Tomatoes	2	2	
Wheat	1	1	

using agricultural fields was made up of 68% insects and invertebrates (Paisley et al. 1994). Wild turkey populations in the study area were high and were reported to be increasing between 1988 and 1993 where the study occurred. The use of agricultural fields was predominantly by hen turkeys with broods. Data collected revealed that waste corn made up 77% of all identified agricultural foods eaten by wild turkeys. Waste corn was the principal food item during spring and fall. The authors stated that although agricultural habitats were important to wild turkeys during the growing season, the consumption of harvestable agricultural crops by wild turkeys was low. In another study of turkey crop damage in Wisconsin (Craven 1989), 51% of producers surveyed felt that wild turkeys caused no significant problems, and only 9% felt that turkeys caused significant damage to crops with the major reported problem being damage to unharvested corn. Of those who considered turkeys to be a major problem, only 3% estimated losses at \$500 or more. Conclusions reached from this study were that the perception that wild turkeys are responsible for major crop damage and economic loss to farmers is unfounded. A similar study in Iowa (Gabrey et al. 1993) confirmed that actual crop damage caused by wild turkeys is minor. Gabrey reported that most of the damage observed to corn and oat seedlings was caused by other wildlife species. In earlier Iowa surveys, 62% of producers estimated crop losses to turkeys at from \$ 1 to \$250 per year, 28% estimated losses from \$251 to \$500, and 10% reported losses exceeding \$500. Although corn may be the most important fall, winter, and spring food of turkeys from these agricultural areas, it must be noted, based on examination of wild turkey crop analysis, that from 77 to 90% of the corn kernels eaten during these periods were either

dirty or weathered, indicating that the birds were consuming unharvested (waste) grain found on the ground. The bottom line, based on the results of these and other studies, surveys, and observations is that although wild turkeys can cause some damage to agricultural crops, it is often minimal in terms of economic impact. With the exception of damage to some speciality crops, silage, and hay, as revealed from respondents to the 1999 survey, most crop damage actually confirmed to be caused by turkeys is light.

Rarely is wildlife damage evenly distributed across crops or among individual landowners. For example, I obtained a copy of a report by an USDA-APHIS-Wildlife Services' colleague, which indicated a Vernon County, Wisconsin, ginseng farmer suffered turkey damage to his crop exceeding \$38,000 in 1998. Following the unsuccessful installation of over two miles of temporary electric fencing to impede turkey access to the ginseng beds, a shooting permit was issued to the farmer to use lethal reinforcement of harassment techniques. I recently had an E-mail note from a colleague reporting significant wild turkey damage last growing season to cantaloupe and melon experimental plots. However, after reading carefully his description of the physical damage observed that was attributed to turkeys, I informed him that based on my experience and assessments made in the field, the damage was most likely not caused by turkeys, but by crows (*Corvus brachyrhynchos*). Here again, because the presence of wild turkeys in an agricultural field is obvious, wild turkeys were perceived to be the source of the damage.

It is very likely as wild turkey populations continue in some areas to increase and expand their range, agricultural damage

caused by these birds will increase, especially to some specialty crops and in areas where these birds are not hunted and become more acclimated to human activities. In fact, anecdotal reports are often received from knowledgeable wildlife professionals about individual problem wild turkeys. I received an E-mail note last spring about a gobbler who inflicted damage to a staff member's automobile, apparently attempting to fight his reflection of what he perceived to be a competing gobbler in his territory. It is not uncommon to hear about wild birds that are being fed around homes or barns becoming aggressive toward humans and farm animals.

Economic value of wild turkey/tradeoffs

The intrinsic, consumptive use and estimated economic values of restored wild turkey populations are significant, although possibly not well documented in many states. Based on earlier as well as more recent studies, the economic value of the wild turkey resource is important. For example, Bauman et al. (1990) reported that, based on data obtained of turkey hunting expenditure surveys from six states—Arizona, Missouri, Minnesota, Pennsylvania, South Carolina, and West Virginia, following the 1988 spring season, the total expenditures by hunters in these six states was slightly over \$74 million. Extrapolating the average expenditures from these six states to be \$12,333,291 and multiplying that average figure to the 46 states, which in 1989 had a spring turkey season, would imply that spring turkey hunting in the United States generated over \$567 million dollars of expenditure values. This study also estimated the expenditures by these six state wildlife agencies on management of their wild turkey resource to average \$89,708 annually. With the economic expenditures by hunters in these

six states averaging over \$ 12 million annually, the management cost appears to be money well spent.

In a more recent analysis (Grado et al. 1997) of turkey hunters in Mississippi, based on 1993 survey data, it was estimated that turkey hunters expended \$ 14.8 million during the season, and total sale impacts from turkey hunter expenditures was \$16.7 million. From this data, it is obvious that if turkey populations increase significantly along with a corresponding increase in numbers of turkey hunters, the economic impact would also likely increase. Conversely, if turkey populations decline significantly, causing a reduction in hunter interest, this economic impact will decline. Clearly, there are tradeoffs associated with wild turkey population fluctuations, and both agricultural damage and economic impacts are important. If you are an avid turkey hunter, you want to see populations continue to increase; however, if you are an agricultural producer who is suffering damage, especially if you are the ginseng farmer in Wisconsin, you do not want more turkeys.

Management implications

Although the standard reference for many of us working in the wildlife damage management area is the Prevention and Control of Wildlife Damage Handbook (Hygnstrom et al. 1994), at the time of its revision and update from the 1984 version, wild turkey damage was not identified to be significant enough to warrant a chapter. I suspect that any future version of this excellent reference will include a chapter on techniques and methodologies to prevent or control damage caused by wild turkeys.

As previously noted with the combination of: increasing wild turkey populations in many rural and urban areas across the United States; changing demographics, e.g. trend of more private landowners with small acreage tracts; increasing adaptability of wild turkeys to human disturbance; natural expansion of range by established wild turkey populations; and the increasing interest by landowners in specialty crops (i.e. ginseng, mushrooms, fruit crops, flowers, etc.), we can expect more concerns and complaints about crop damage attributed to wild turkeys.

Obviously, some of these complaints, when appropriately assessed on-site, are likely to be legitimate damage from wild turkeys and must be addressed if significant damage is occurring or expected to occur unless prevented or controlled. However, as most of us who have dealt with private landowners and agricultural producers are well aware, any wildlife species that is readily visible in crop fields is likely to be anticipated to cause damage whether or not damage to the species can be confirmed. I will not attempt to list all the wildlife species which cause damage to agricultural crops because most of them are well known, even if they are rarely observed in the field by owners or managers. The point is that confirmation via on-site assessment is critical to determine the species causing the damage, regardless of what species is reported as a concern of producers, landowners, or managers.

If, in fact, wild turkeys are confirmed to be the principal cause of significant damage to crops or property, appropriate prevention or control techniques can be employed by the landowner, or someone they receive assistance from, to effectively prevent or significantly

reduce further losses. As noted from the recent national survey, hay and silage, along with some specialty crops like ginseng, were reported to be most severely damaged by wild turkeys. I have also heard some comments recently from biologists about winter problems in cattle feed lots with wild turkeys competing with the cattle for feed. Generally speaking with such situations, scaring devices can be employed to reduce the ongoing damage; and if anticipated in future years, preventive fences, better shelters for silage, or coverings for hay could prevent most damage by wild turkeys.

The most difficult situations may be with high value specialty crops on small acreages which are interspersed in woodland turkey habitat. However, appropriate prevention techniques could allay future damage by wild turkeys. For the sake of time, I will not list all the potential tools and techniques to prevent or reduce damage by wild turkeys; however, a few of the most common depending on the crop, size of area, proximity to houses, and community concerns are as follows: (1) noise aversion-firecrackers, shellcrackers, discharging firearms, exploders; (2) lure crops, (e.g. clover, millet, milo, and corn, planted adjacent to high value crops); (3) use of motion devices (e.g. scarecrows and colored fencing, flagging, netting, or mylar tape); (4) use of a tethered barking dog adjacent to high value crops; (5) other turkey resistant barriers (e.g. snow fencing, hardware cloth, and chicken wire); (6) mechanical barriers or shelters to prevent access by turkeys; and (7) depredation or kill permits issued by some state agencies for the taking of persistent birds.

It has been my experience that, based on research and damage complaints

investigated, the great majority of wild turkey damage complaints are unfounded. In fact, having wild turkey hens and broods in crop fields in late spring and summer is probably a significant benefit to producers because of the amount of insects and weeds they consume along with other material.

Conclusion

There continues to be rumors that wild turkeys are preying upon young gamebird chicks and herpetofauna or other vertebrate species. These rumors are "barbershop" talk and have not been confirmed in any food habit studies I am aware of. During the past 43 years, I have hunted wild turkeys during spring and fall seasons and have always examined the crop content; and in only two birds have I found vertebrates, one of which was some tadpoles (*Bufo sp*) and the other a small Eastern garter snake (*Thamnophis sirtalis sirtalis*). The majority of crop contents have included a diversity of plant materials and insects. I have harvested turkeys with over 950 invertebrates (most of which were the same species) in their crop. Where landowners lease land for hunting wild turkey, rarely are any complaints about crop damage reported. There is an educational job to be done to help landowners, agricultural producers, and the public recognize the values of the wild turkey resource to their community and to the economy of their state. As one who has lived from one spring gobbler season to the next for most of my life, I value the successful restoration of the wild turkey across the United States as one of our greatest treasures. As a farm landowner, I certainly recognize the importance and economics associated with protecting crops from depredation. However, just because we commonly see wild turkeys in crop fields, does

not mean they are the source of damage losses. In my opinion, as a wildlife professional who has worked over 35 years in the profession and as an avid turkey hunter, we should all take pride in the many values associated with the restoration of wild turkeys, aside from their estimated economic value of over \$600 million in expenditures by turkey hunters. Yet, we must be responsive to landowners' concerns about turkey damage, real or perceived, to avoid their losing interest in managing for wildlife on private lands, which make up almost 2/3 of our land base.

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