

Strategic Management Plan for Wild Turkeys in Georgia (2017-2026)



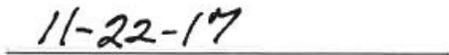
Georgia Department of Natural Resources
Wildlife Resources Division
Game Management Section

**STRATEGIC MANAGEMENT PLAN FOR
WILD TURKEYS IN GEORGIA
(2017-2026)**

Department of Natural Resources
Wildlife Resources Division



Mark Williams, Commissioner



Date



Rusty Garrison, Director



Date

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WILD TURKEYS IN GEORGIA
(2017-2026)**

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PLAN DEVELOPMENT AND ACKNOWLEDGEMENTS

This management plan was developed by Wildlife Resources Division (WRD) biologists using the best available science to support plan goals, objectives, and strategies. The plan was publicly noticed for review and comment by the public. The public comment period was 30 days and captured comments both online and during public hearings. A total of 4 public hearings were hosted across the state and comments were generally supportive of the plan (Appendix D).

The WRD Game Management Section's Wild Turkey Committee would like to thank all of the staff and biologists across the years who have caught and restocked turkeys, collected and analyzed data, and managed the datasets that we currently use to inform management and regulatory decisions. The NWTF and Georgia Chapter of the NWTF have been partners in many habitat projects and other projects with our agency, and we greatly value these partnerships. A special thank you to NWTF biologist, Lynn Lewis, for her review and input on this plan. We thank Dr. Tina Johannsen and John Bowers for providing leadership and guidance throughout the process of developing this management plan, and for reviewing earlier versions of this plan.

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Cover Photo: Luke Vickery and his sister Maggie's first turkey. Also pictured is their proud father, Brian Vickery, a Wildlife Technician IV in Game Management Region 5.

EXECUTIVE SUMMARY

Purpose Statement

The purpose of Georgia's wild turkey (*Meleagris gallopavo*) strategic management plan is to ensure the long-term conservation of Georgia's wild turkey population while providing sustainable harvest and other recreational opportunities, promoting its value in Georgia's landscape, and minimizing conflicts.

Wild Turkey Management Goals and Objectives

To achieve the overarching objective of the Purpose Statement, the Wildlife Resources Division (WRD) has identified five fundamental goals with supporting objectives for the management of Georgia's wild turkey population:

1. Population Goal: Ensure the Long-Term Conservation of Georgia's Wild Turkey Population

Objective: *Annually collect and analyze biological data to monitor wild turkey population trends.*

Objective: *Annually collect and analyze biological data to monitor wild turkey reproduction.*

Objective: *Investigate, monitor and mitigate potential limiting factors on wild turkey populations.*

2. Habitat Goal: Increase and Maintain Wild Turkey Habitat Throughout Georgia.

Objective: *Quantify current wild turkey habitat in Georgia and increase habitat by 10% on WRD-managed lands.*

Objective: *Promote habitat management practices that sustain or increase wild turkey populations on public and private lands.*

3. Use Goal: Maximize Sustainable Hunting Opportunity

Objective: *Annually collect and analyze hunter harvest data to monitor trends in gobbler harvest.*

Objective: *Provide sustainable, quality hunting opportunities on public lands.*

Objective: *Provide sustainable, quality hunting opportunities on private lands.*

Objective: *Maintain or improve access for wild turkey hunting.*

4. Research Goal: Advance the Current Base of Knowledge on Turkey Management Issues and Questions

Objective: *Initiate and support scientifically valid research projects and investigations to answer management questions and identify effective management actions that support the other objectives.*

Objective: *Collect and analyze survey data to evaluate hunter attitudes and opinions on wild turkey management, regulations, and related issues.*

5. Nuisance Goal: Mitigate Wild Turkey Damage

Objective: *Minimize conflicts in urban and agricultural areas and provide guidance for mitigating damage when it occurs.*

BACKGROUND INFORMATION

History of Turkeys in Georgia

A native of North America, the range of the wild turkey (*Meleagris gallopavo*) originally stretched from the Atlantic Ocean to the Rocky Mountains, and from Ontario to Central America. There are 5 subspecies: eastern wild turkey (*M. g. silvestris*), Florida wild turkey (*M. g. osceola*), Merriam's wild turkey (*M. g. merriami*), Rio Grande wild turkey (*M. g. intermedia*), and Gould's wild turkey (*M. g. mexicana*). In Georgia, the eastern wild turkey is the only subspecies and is found statewide.

Wild turkeys were important table fare to American pioneers. Unregulated harvest, along with the tremendous exploitation of forest resources that greatly degraded wild turkey habitat, resulted in a precipitous decline of wild turkeys not only in Georgia, but also throughout the United States. Wild turkey populations probably reached their lowest levels in the late 1800's and early 1900's. At this point, many states began recognizing the need for conservation measures to protect and support this important resource.

On December 19, 1859, the first law protecting the wild turkey entered the Georgia Code, setting a closed hunting season from the tenth day of April until the first day of October. The penalty for conviction was a fine or imprisonment at the discretion of the court with one half of the fine to go to the informer or prosecutor (Beavers 1987). Unfortunately, enforcement of this law and most wildlife laws at the time was difficult at best.

In the early part of the 20th century, wild turkey restoration in Georgia occurred in isolated areas where individuals had specific wildlife interests. It wasn't until the 1940s that the Georgia Game and Fish Commission (presently, the Wildlife Resources Division) began efforts to restore turkeys with the establishment of a refuge in McDuffie and adjoining counties. Turkey populations in that area grew to the point that in 1948, the Georgia Game and Fish Commission undertook its first trap and relocation effort releasing birds on property that is now Berry College Wildlife Management Area (WMA).

In the 1950's, the Commission engaged in a pen-raised turkey restocking program. In 1966, after producing approximately 10,000 pen-raised turkeys, the Commission decided to cease this program. The effort was unsuccessful as the captive bred birds failed to thrive.

By 1968, wild turkey populations were present in some counties in Georgia with isolated areas containing huntable populations. With forests regenerating following the major deforestation seen in the early part of the 1900's, Georgia was primed for restoration of wild turkeys.

In 1973, the Georgia Department of Natural Resources (DNR) initiated an effort to restock turkeys in areas that (1) had suitable habitat, (2) were at least 8,000 acres in size, (3) had adjacent areas of suitable habitat for population expansion, (4) were situated for rigid protection, (5) had relative stability from change for at least the next five years, and (6) were void of turkeys

(Simpson 1978). These restocking efforts, along with increased measures to control poaching resulted in an increase from an estimated 17,300 birds in 1973 to an estimated population of 113,000 birds in 1984 with huntable populations of turkeys in almost every county. The last restocking in Georgia occurred in 1998 in Irwin County.

Since seasons were initially established back in 1859, turkey hunting has always been allowed in Georgia. However, seasons and bag limits have varied by county across the years. With the success of the 1970-80's restocking efforts, eventually seasons were standardized throughout the state. In 1993, a statewide hunting season for turkeys was established starting the first Saturday after March 19 and continuing through May 15 with a bag limit of three gobblers statewide. This season framework remains in place today, along with a special opportunity turkey season implemented in 2014 for youth 16 years of age and younger and mobility impaired hunters beginning the Saturday prior to the regular season.

Current Status of Turkeys in Georgia

Georgia has a long history of successful wild turkey management. The early 1990's saw restoration efforts reach their peak. Wild turkey populations were growing rapidly and productivity indices (poult/hen ratios) were at all-time highs, often over 4 poult/hen statewide. Most of the restocking effort ended by 1996, and the observed population growth rate appeared to slow around the same time. Following the theoretical sigmoid growth curve, the population had reached and surpassed its inflection point, and began to experience lower productivity with poult/hen ratios between 2-3 poult/hen. Between 2003 and 2014, the population appeared to reach carrying capacity, productivity averaged 1.5 poult/hen, the population was relatively stable with some fluctuations, harvest was relatively stable, and hunter numbers were slightly increasing. The spring of 2015 saw a small dip in harvest followed by a significant harvest decline in 2016. Productivity between 2012 and 2015 was the lowest four-year period on record. Many factors impact wild turkey populations, such as habitat quality and quantity, predation, disease, and weather. All of these are likely contributing to variation in reproduction and population size. We observed a small increase in reproduction indices in 2016, which may be an indicator of future improvement.

Population, Reproduction, and Limiting Factors

Georgia's wild turkey population is annually monitored through a combination of three main surveys: the Turkey Hunting Population Index Survey (i.e., Harvest Card Survey, Appendix A), the Turkey Production Index Survey (i.e., Brood Survey, Appendix B), and the Telephone Survey of Turkey Hunters. Each survey provides vital information that is used to monitor trends in population parameters.

POPULATION DATA

The annual Harvest Card Survey measures hunter effort and success among avid turkey hunters, but more importantly it provides annual indices to the overall turkey population and the gobbler segment of the population. A harvest card is mailed to participating hunters prior to the

beginning of the turkey hunting season. Beginning in 2017, the “card” was emailed to hunters who downloaded their harvest record within a short time frame prior to the opening of turkey season in an effort to increase the number of participating hunters. For each hunting trip, hunters are asked to record the date, number of hours hunted, county or physiographic region hunted, the number of gobblers seen, the number of hens seen, the number of gobblers heard, the number of gobblers killed, and if they were the hunter or were a guide. Prior to 2013, gobblers and hens were lumped into the number of turkeys seen.

This survey began in 1979 with a total of 450 cooperating hunters. In 1990, the number of cooperators was increased to 2,000 and currently remains at or near that number. Cooperating hunters in this survey are solicited through newspapers, magazines, the Wildlife Resources Division (WRD) hunting regulations guide, internet hunter forums, WRD turkey quota hunt database, the National Wild Turkey Federation (NWTF) member database, and programs to interested groups.

One type of scientifically accepted population index is called a catch per unit Effort (CPUE) index, where the number of animals seen/heard/caught per unit of effort can be standardized and compared among years. The harvest card survey provides an index to the overall population calculated as the number of turkeys seen per hour of hunting effort, and it provides an index to the gobbler segment of the population when calculated as the number of gobblers heard per hour of hunting effort. These two indices provide a long-term index to the turkey population.

In addition to the Harvest Card Survey, WRD also conducts an annual survey of turkey reproduction (described in the next section). Data from that survey can be used to calculate an additional population index (hens per observer) that tracks the female segment of the population. Between these two surveys, WRD has long-term indices of the overall turkey population as well as both the gobbler segment and the hen segment of the population.

The Breeding Bird Survey (BBS) is a cooperative effort between the U.S. Geological Survey's Patuxent Wildlife Research Center and Environment Canada's Canadian Wildlife Service to monitor the status and trends of North American bird populations. Following a rigorous protocol, BBS data are collected by thousands of dedicated participants along thousands of randomly established roadside routes throughout the continent. Professional BBS coordinators and data managers work closely with researchers and statisticians to compile and deliver these population data and population trend analyses on more than 400 bird species, for use by conservation managers, scientists, and the general public. BBS data include trends for wild turkeys and can be used as an additional population monitoring data source.

PRODUCTION DATA

The annual Turkey Brood Survey provides important data on wild turkey reproduction and provides an index to the female segment of the population. Survey forms are mailed to participating observers prior to the beginning of the survey (June 1). Cooperators in this survey include field personnel from WRD, the Law Enforcement Division, and citizen-scientists. Observations are made during the course of regular field duties. No special efforts are made to locate turkeys for the survey (doing so would bias and invalidate the results). For each

observation of turkey(s) in the field, observers record the number of hens, poult, broods, gobblers, and unknown turkeys.

This survey began in 1978 and was initially conducted May through August. Beginning in 1991, the survey period was shortened to June through August when analysis showed that a shorter time period was adequate. Inclusion of gobblers and unknown turkeys started in 2006. Beginning in 2015, data were recorded by observation rather than by day. This change followed a University of Georgia (UGA) analysis of all turkey reproductive data in the Southeast and a supporting recommendation that all states use a common data collection method (Byrne et al. 2015). This change allows our data to be comparable to other Southeastern states, which allows for examination of large-scale changes in reproduction and population indices. This examination has also revealed growing evidence for density dependent reproduction in wild turkeys (Bond et al. 2012, Byrne et al. 2015).

Data are compiled on a statewide and physiographic region basis. The survey data are used to examine the relative quality of the reproductive season (as indexed by poult/hen) for any given year, and for comparing long-term trends in reproduction.

POTENTIAL LIMITING FACTORS

In wild turkey populations, annual mortality rates approaching 50% are common. The most common causes of non-hunting mortality are predation and poaching along with a smaller amount of mortality due to factors such as diseases and parasites (Dickson 1992). Most poult mortality occurs during the first two weeks of life, and factors include predation, exposure, starvation, and flooding (Speake et al. 1985). For juvenile and adult turkeys, the primary source of non-hunting mortality is predation (Vangilder 1992). Hens suffer heaviest predation during the nesting season, while incubating their eggs. Mortality rates of 10% or more have been reported for hens during the nesting and brood-rearing period. Predation rates are generally lower for the remainder of the year. Natural predation rates for gobblers are much lower than for hens. However, in a heavily hunted population, a high percentage of adult gobblers may be taken by hunters. Mast failure, drought, and flooding can also influence annual mortality rates.

Good habitat management can mitigate most predation issues, however it is important to consider predation management as a potential tool. With predation accounting for as much as 30% of nest failures, 50% of poult mortality, and 10% of hen mortality there may be biological potential that could be realized when predation is a significant limiting factor. Developing policies and techniques, similar to those used in quail management, that allow land managers to implement scientifically supported tools should be an important consideration.

Diseases such as avian pox, mycoplasmosis, salmonellosis, aspergillosis, lymphoproliferative disease virus (LPDV) and histomoniasis (blackhead disease) can have population-level effects, but generally only affect individual turkeys. There has been recent public concern about the possible connection between histomoniasis and the use of chicken litter as fertilizer. Histomoniasis is caused by a protozoan parasite that lives in a tiny cecal worm that can be carried by chickens (Davidson 2006). The potential transmission route of histomoniasis from litter removed from commercial chicken breeder houses and layer houses to wild turkeys has

been documented by Waters, et al. (1994). The same study also documented that litter from chicken broiler houses was a safer alternative, with very low transmission potential, if chicken litter was desirable as a fertilizer source.

The popularity of supplemental feeding of wildlife raises concern about aflatoxin (Davidson 2006) because supplemental feeding and baiting practices represent a significant exposure route in wildlife populations (Dale 2014). Aflatoxin is a poisonous substance produced by the fungi *Aspergillus flavus* and *Aspergillus parasiticus*. The fungi commonly grow on feed pellets, livestock fodder and cereal grains. High levels of aflatoxin consumption can cause liver damage, immune system dysfunction and leave the animals in generally poor health. Dale (2014) observed aflatoxin concentrations high enough to produce deleterious, and in some cases, lethal effects in multiple wildlife species. Consumption of aflatoxins is hazardous to all wildlife, pets, livestock and humans, but species vary in their susceptibility (Creekmore 1999). Poultry are among the most highly susceptible, with poults being one of the most sensitive (Arafa et al. 1981, Dalvi 1986). Recent research has shown even feed considered aflatoxin-free (corn and milo) can develop aflatoxin in a relatively short amount of time in warm moist environments (Dale et al. 2015). Corn piled in wet conditions resulted in the highest individual concentration of 3230 parts per billion (ppb); the federal Food and Drug Administration recommends that grain fed to wildlife not exceed 20 ppb aflatoxin (Dale 2014). Aflatoxins are produced optimally between 82 and 86°F (O'Brian et al. 2007) and form rapidly when grain moisture content is 18% or greater (Moreno et al. 2011). High humidity or accumulation of dew may provide sufficient moisture for aflatoxin formation in grains used as wildlife feed (Dale 2014). Dale (2014) observed that piling of corn may pose a substantial risk with lethal levels of aflatoxin appearing within a matter of days, not weeks.

The following information/guidelines are from Dale (2014) and Dale et al. (2015). We encourage those who provide supplemental feed to consider the negative consequences. While it is impossible to eliminate the risk of aflatoxin exposure to wildlife, steps can be taken to minimize it. Purchase grain from reputable dealers, avoiding damaged or waste grain. Avoid grains with any visible signs of mold growth and/or clumping, as this may indicate the presence of aflatoxin-producing fungi. Avoid purchasing visibly damaged grain and intentionally cracked corn as that can facilitate aflatoxin contamination. Aflatoxin production occurs when the *Aspergillus* fungus has access to the sugar present in grains, thus selecting lower sugar grains like milo instead of corn, reduces the chances that aflatoxin will be present at the time of purchase. To reduce storage time, avoid purchasing grain not planned for use in the immediate future. Aflatoxin contamination increases with length of time, regardless of storage container. Stored grain must be kept dry. Avoid extreme temperature fluctuations, as this may cause condensation within the storage container, leading to aflatoxin formation. Grain beginning to form mold or containing any insects should be disposed of immediately. At the feeding location, reduce the length of time that grain persists by limiting the amount of grain dispensed so as not to exceed what can be consumed in a few days. Feeding should be limited to times when temperatures are below 60°F and should not be conducted when rain is expected. Aflatoxin production begins when grain moisture content exceeds 18%. Therefore, high humidity and dew may provide sufficient moisture to facilitate the formation of aflatoxin. Disperse grain as much as possible by broadcasting rather than piling. Piling grain should be avoided because it facilitates the accumulation of moisture, increasing the risk that aflatoxin production occurs. The prompt removal of uneaten grain is recommended. Clean grain feeders regularly with bleach.

Avoid refilling grain without first emptying, cleaning, and fully drying feeders. In summary, aflatoxin formation in wildlife feed can be reduced by selecting milo instead of corn, broadcasting grain instead of distributing in piles, limiting the length of time that grain persists before ingestion, and only feeding during dry conditions when daily temperatures are below 60°F.

WRD is a partner in the Southeastern Cooperative Wildlife Disease Study (SCWDS) at the UGA. Wildlife veterinarians at SCWDS monitor disease issues among wildlife populations, including turkeys, through constant contact with cooperating state agencies. WRD collaborates with SCWDS to lead disease monitoring efforts in Georgia.

Wild Turkey Habitat Management

As with all wildlife species, proper management of habitat is the key to producing abundant wild turkey populations. Georgia has more than 24 million acres of forestland, and WRD promotes management practices that benefit wild turkeys by providing seasonal habitat needs. Habitat management practices may include protecting mast producing hardwoods, thinning dense pine stands to allow sunlight to hit the ground and stimulate groundcover plants, application of prescribed fire on suitable sites at proper spatial scales and time intervals, managing openings to provide brood-rearing habitat, minimize mowing during critical nesting and brooding periods, and maintaining streamside management zones. Currently statewide, the two most important habitat components that are lacking are nesting cover and brood-rearing habitat.

PUBLIC LANDS

In Georgia, public lands represent 7% of the total land base. Typical public lands open to turkey hunters include: WMAs, some Public Fishing Areas, National Forests, some military installations, and National Wildlife Refuges. Multiple hunter surveys have revealed a variety of demographics related to public land turkey hunting in Georgia. By reviewing hunter surveys conducted each year from 2012-2016 (Responsive Management: Georgia Spring Turkey Harvest), several important trends have been documented. Nearly 27% of hunters utilize a variety of public land turkey hunting opportunities in the state; about 18% of turkey hunters hunt both public and private lands. Over the past 5 years, 82% of public land hunters rate their turkey hunting experience as satisfactory or better. WMA turkey hunt sign-in data (2012-16) reveals that the majority of public land hunters are utilizing WMAs with an average of 14,500 turkey hunters using one or more areas.

Maintaining quality public hunting lands is important and is likely to become challenging in the future as private land lease fees increase and availability decreases because of development and changes in land ownership trends. Management plans on public lands should reflect management activities that improve wild turkey habitat when it is compatible with other management goals for the property. Intensive management can be challenging with the limited budgets of state and federal management agencies; therefore, these land management agencies should consider utilizing non-traditional resources to accomplish habitat management goals. Conservation groups, such as the NWTf, can provide funding and other support. GADNR

should continue building relationships with conservation groups to provide resources that will assist in meeting management goals.

PRIVATE LANDS

Private landowners hold 93% of the land in Georgia, which means management activities on private lands are critical to the long-term conservation of wildlife, including turkeys. Therefore, it is imperative that wild turkey habitat is enhanced and maintained on private lands. This can be facilitated by continued monitoring of wild turkey populations throughout the state and by providing technical guidance to private landowners with emphasis on wild turkey habitat enhancement.

Educating private landowners on proper habitat management techniques and available incentive programs (e.g., Conservation Reserve Program, Environmental Quality Incentives Program, and the Working Land for Wildlife Program) are vital for maintaining or increasing wild turkey populations. For example, NWTf has created a new motto “Save the Habitat. Save the Hunt.” to reflect shifting priorities from restocking turkeys to habitat management. Regardless of the primary land use objectives, landowners can implement practices that can enhance wild turkey habitat. Informing landowners about timber management practices, prescribed fire, wildlife openings, planting, and possible incentives for such management can maintain or increase ecological carrying capacity. Technical guidance and assistance is available from many sources (WRD, NWTf, Georgia Forestry Commission, Natural Resources Conservation Service, private consultants, etc.) throughout the state. It is very important that both the WRD and private landowners work together to ensure future generations have the wild turkey hunting opportunities that we have today.

Wild Turkey Hunting Opportunity

Georgia has enjoyed a long history of excellent turkey hunting. Maintaining this tradition is a priority. Currently, Georgia enjoys one of the longest spring seasons in the country, averaging 56 days with a bag limit of three gobblers per season and all-day hunting. The season runs from the first Saturday after March 19th to May 15th, with the weekend prior open for youth (16 and younger) and mobility-impaired hunters. Our current season structure allows for hunters to hunt during the period of peak gobbling activity in every part of the state.

WRD’s primary intentions with hunting regulations are to sustain a huntable population of wild turkeys and to maximize hunter success and satisfaction. WRD collects data from several sources related to turkey hunters, harvest, and hunter success; however, the primary source of this data is the annual Telephone Survey of hunters. Since 2005, WRD has contracted with Responsive Management to conduct this survey shortly after the turkey season ends. A statistically valid estimate of the number of turkey hunters as well as the number of turkeys harvested are calculated from this survey. In select years, additional questions are asked to gain more specific information about the opinions and attitudes of turkey hunters.

Since 2005, statewide turkey hunter numbers have averaged 54,000, with a range of 45,000 to 60,000. Roughly 30% of those hunters are successful. The estimated annual turkey harvest over

this time averaged about 30,000. Across public and private lands, turkey hunters rating their hunting experience as satisfactory or better averaged nearly 90% between 2007 and 2016, with the most recent five year average (2012-16) at 86%.

During the 2012 Telephone Survey, WRD asked additional questions related to hunter satisfaction to better understand what factors are considered when rating a hunt as satisfactory or not. To consider an individual hunt to be satisfactory, hunters rated “hearing a gobbler” as the highest choice. To consider the entire season to be satisfactory, hunters rated “hearing a gobbler on more than half of the hunts” as their second choice and “simply going hunting” as the most popular choice. This information is supported by informal comments received during the Harvest Card Survey. Hunters often write comments on their harvest cards about the quality of their hunting season. In years when hunters report hearing a gobbler in less than two hours of hunting, comments are generally positive. However, in years when it took two or more hours to hear a gobbler, comments are generally negative. These data indicate a strong relationship between hunt satisfaction and hearing a gobbler. Both the informal comments and the Telephone Survey results demonstrate turkey hunters simply want to “go hunting” and “hear a gobbler” to have a satisfactory outing.

The Harvest Card Survey provides a relative measure of the quality of the turkey hunting season by calculating the number of hours hunted per turkey seen. Lower numbers indicate a better season (i.e., fewer hours in the field to see a turkey), and this index is a descriptor of the relative quality of the hunting season for any given year.

Data from the annual Turkey Brood Survey and the Harvest Card Survey are used to predict the coming hunting season’s expected quality (as measured by number of hours hunted/turkey seen). Data from previous year’s population and reproduction indices are combined in a regression equation to predict current year’s qualitative measure of hours hunted/turkey seen. The results of this analysis are used to inform hunters about expectations for the relative quality of the upcoming turkey hunting season.

In 2016, WRD introduced a mandatory harvest reporting system called “Georgia Game Check”. Hunters are required to report county of kill, date of kill, and turkey beard length (as an indicator of age) for all turkeys harvested. While this tool produces minimum reported harvest rather than estimated total harvest, compliance estimates from surveys can be used to estimate harvest at the county level; a spatial scale that statistically valid telephone hunter surveys cannot economically achieve. Other benefits of this data collection tool include temporal distribution of harvest, age ratios of birds, and trend verification for existing data sources. This new reporting system coupled with our existing data collection improves the ability of WRD biologists to develop sound, scientific management recommendations.

PUBLIC LANDS HUNTING

Turkey harvest management on public lands is important to ensure that viable, healthy populations are maintained. While viable populations are the ultimate goal, an additional goal is to maintain population levels that can sustain the considerable harvest that occurs on many of these areas while maintaining hunter satisfaction levels. Thackston and Holbrook (1995) found

that hunter satisfaction on WMAs was tied to both turkey population and hunter interference levels (“Hunter interference” is defined as real or perceived disturbance that may come in the form of other hunters walking in on them, calling/working the same bird, or otherwise negatively affect their hunt). Shields et al. (2009) found that hunters participating in fee-hunts or special quota hunts in Florida also heavily weighted number of turkeys seen or available and density of hunters to hunt satisfaction. Additionally, hunters on limited-opportunity fee hunts were even less tolerant of hunter interference than those participating in general public hunts even though the Florida Fish and Wildlife Conservation Commission set hunter densities at one hunter per 500 acres for turkey quota hunts. Miller and May (1990) suggested that by lowering hunter densities, which reduces hunter competition, agencies may increase hunter success and improve hunter satisfaction. Methods for lowering hunter density may include using quotas, closing roads, or opening the season on weekdays not weekends (Thackston and Holbrook 1995)

Utilizing surveys and sign-in data, hunter use and satisfaction levels have been monitored for several decades. Annually, about 16,500 turkey hunters hunt public land, most of those (14,400) on state WMAs. Greater than 50% of turkey hunters rank public land hunting good to excellent and generally less than 15% of hunters rate it poor. These satisfaction levels are reasonable and attainable as benchmarks for future management goals. A recent study in Florida (Shields et al. 2009) reported that when turkey harvest occurred at levels of 1 gobbler per 18 man-days of hunting or less on WMA quota hunts, hunter satisfaction was very high (>90% of hunters were satisfied).

Hunt strategies currently employed to regulate harvest and/or improve hunt quality on state WMAs are: quota hunts only, youth only hunts, a mix of quota hunts (for the first 1-3 weeks) and open hunts for the remainder of the season, and open hunts for the full season. Quota-only hunts are most effective at reducing harvest on highly utilized WMAs. When implemented on areas with good turkey densities, quotas improve hunt quality by reducing hunter densities, while also increasing hunter success. WMAs that employ a mix of quota and open hunts reduce harvest early in the season, which may improve long term adult to juvenile gobbler ratios (Kurzejeski and Vangilder 1992) as well as improve hunt quality early in the season while maximizing opportunity later in the season. Open hunts provide maximum hunter opportunity (especially for hunters not selected for quota hunts); participation is typically high during the first few weeks then declines as the season progresses.

PRIVATE LANDS HUNTING

The primary tools for regulating harvest on private lands include season length, bag limits, and legal hunting hours. Seasons are set to provide opportunity to hunt the period of peak gobbling activity, which usually occurs around the period of peak wild turkey hen incubation. As hens are busy nesting, gobblers are vocal.

Biologically, opening of the spring hunting season should be timed with the onset or peak of hen incubation (Exum et al. 1987, Healy 1992, Kennamer et al. 1992). The Southeastern Association of Fish and Wildlife Agencies (SEAFWA) developed a white paper on establishing opening dates for spring wild turkey hunting seasons and it recommends that spring turkey season opening dates coincide with peak egg laying (SEAFWA 2016). In Georgia, our current season

balances biology with hunter desires by using a season structure that encompasses geographic peaks in gobbling and hen incubation. Hunters who observe early breeding activity such as displaying, courtship, or breeding may think that Georgia's season starts too late. However, this important time of mating and breeding should remain undisturbed so wild turkeys can successfully mate and hens can begin to lay eggs. If the season opens too early, it may disrupt breeding activity and increase hen mortality. To maximize wild turkey reproduction each year and provide quality hunting experiences, hunting seasons should be timed to begin at the peak of hen incubation; not peak displaying and courtship.

Some hunters have voiced an interest in a fall wild turkey season. When surveyed, hunters were specifically interested in a fall season concurrent with deer season. A fall turkey season concurrent with deer season could result in excessive harvest pressure on turkeys, and would likely have a negative impact on the spring hunting season (potentially necessitating a shorter season and reduced bag limit). Hunters who observe large flocks of turkeys that have shifted from upland areas to bottomland hardwoods to feed on mast in winter often advocate a fall turkey season. Many turkey hunters recognize that fall seasons would negatively impact spring seasons and are generally not interested in any changes to our current spring seasons. WRD recommends not implementing a fall season based on undesirable biological impacts.

HUNTER ACCESS

The term "hunter access" can have two meanings. The first is related to opportunity to access properties for hunting. The second refers to control of ingress/egress on a public property that is open to hunting and how it is used to manage hunt quality, or protect resources on public properties through the use of restricted portions of roads or areas that are walk-in access only.

In gaining access to new properties for hunting, the department in recent years has successfully secured access to properties not traditionally utilized for hunting, such as public fishing areas, utility company land, GA Department of Transportation properties, or other publicly-owned properties. Between 2010 and 2017, the department has added more than 30,000 acres providing turkey hunting opportunities. Continued and expanded cooperation between state, municipal, and federal agencies, as well as corporate and private landowners, is invaluable in garnering support for hunting opportunities on non-traditional sites. WRD will continue working to make new contacts and cooperative agreements where possible to promote turkey management and hunting on sites not typically utilized for hunting. Partnering with non-governmental organizations is important in these efforts, as they may be able to muster local support and pressure for public areas to be opened for hunting access. The Hunter Recruitment, Retention, and Reactivation (R3) cooperative position between NWTF, Safari Club International, Quality Deer Management Association, Georgia Wildlife Federation and WRD has identified many of these opportunities in Georgia's R3 plan.

In terms of managing access on public properties, hunter opinion surveys show that turkey hunters typically prefer limiting access via closing gates and/or roads. When gates are closed, roads can be hunted, and roadside openings provide desirable hunting spots. Additionally, closed gates reduce disturbance to wild turkeys. WRD strives to achieve a balance between diverse hunter desires, managing hunting pressure, and access.

Research Needs

Most wild turkey research in Georgia was completed prior to 1993 and was conducted while turkey populations were still being restored. Populations were growing and had not yet reached carrying capacity. While the existing research still holds relevance, much has changed with turkey populations and habitat in Georgia since the early 1990's. Current research is needed to understand the population dynamics of turkeys that are at or near carrying capacity, thus exhibiting little or no population growth. Additionally, data collection, analysis methods, and technology have changed, allowing improved understanding of wild turkey biology and behavior. Major landscape changes have occurred along with changes in weather patterns. Finally, past studies could not consider the effects of armadillos, coyotes, or feral hogs and their possible effects on turkey populations and reproduction. Additional research is needed to better understand how all of these factors relate to wild turkey biology and management.

Estimates of annual gobbler survival and harvest rates are important pieces of information needed for the development of a wild turkey population model. This information can be obtained through research projects or banding programs.

Recently, UGA and WRD completed a research project in southwest Georgia. This study provided regional information on nesting and gobbling chronology, nesting success, survival, and predation. Researchers also confirmed that prescribed fire had minimal direct impact on nest and poult survival but use of fire to create a mosaic of vegetation communities does improve overall nesting and brood-rearing cover.

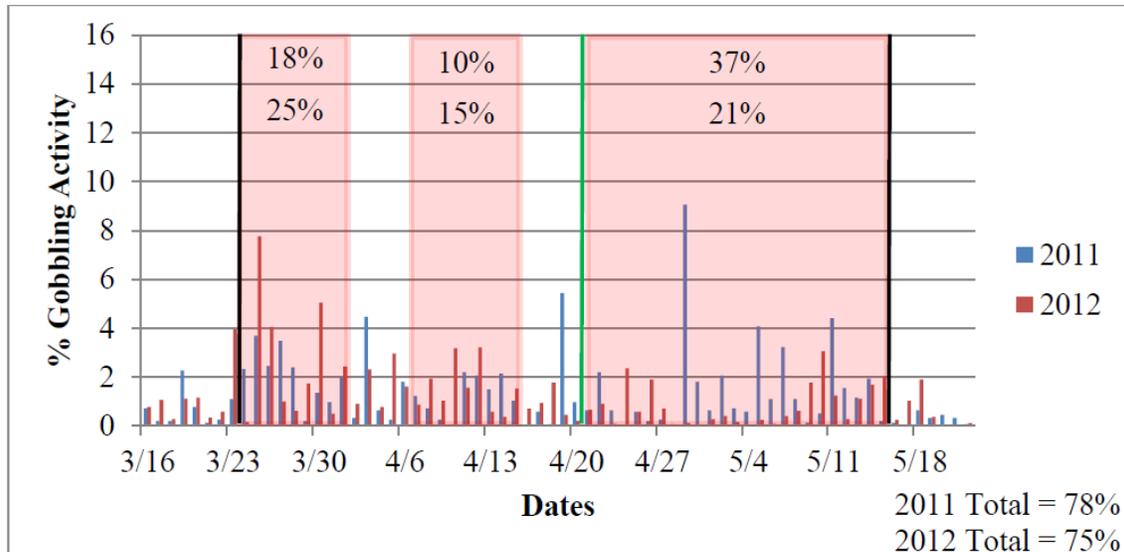


Figure 4-2. Percentage of gobbling activity by eastern wild turkeys during both years of the study on Silver Lake WMA in southwestern Georgia, USA, 16 March-22 May. The black lines indicate the average opening and closing dates of the spring turkey hunting season in Georgia while the green line indicates the average nest initiation date on Silver Lake WMA during the 2 years of this study. The first red box indicates the average dates of the first quota hunt on site, the second red box indicates the average dates of the second quota hunt, and the third red box indicates the average dates of the general hunt. The first line of percentages represents the percentage of total breeding season gobbling activity that took place during each hunt in 2011 while the second line represents the 2012 hunts. Totals reported in the bottom right of the graph represent the percentage of gobbling activity that took place on site within the confines of the hunting season each year.

In 2017, WRD and UGA initiated a similar research project in the Piedmont physiographic region. Both of these research projects were undertaken in communication with researchers and state agency biologists from surrounding southeastern states. The information gathered from these studies will be comparable to similar efforts elsewhere, greatly enhancing our understanding of turkey ecology across our region.

Nuisance Issues

URBAN SITES

Wild turkeys are adaptable and utilize a wide range of forested and semi-forested habitats. Green space development in suburban and urban landscapes has allowed small populations of wild turkeys to thrive and expand into these forested sanctuaries.

Wild turkeys are large birds and can seem menacing to some people. Typically, turkeys are docile and avoid humans; however, in certain situations, wild turkeys can become a nuisance. Nuisance turkey complaints typically fall into three categories: turkeys acting aggressively towards people, turkeys scratching and feeding in flower beds or gardens, and turkeys causing

property damage. Empowering landowners to mitigate the problems associated with urban wild turkeys is important. Mitigation techniques may include scare tactics (i.e. hazing), exclusion barriers, habitat modification, or a combination of techniques. When necessary, WRD personnel will promptly investigate the situation on-site and provide appropriate technical guidance and support.

AGRICULTURAL SITES

Wild turkeys are a well-established part of the agricultural and rural landscape. They are highly visible and often active all day, unlike many mammalian game animals, which are most active around sunrise and sunset. Occasionally, wild turkeys appear to be responsible for damage that turns out to be caused by nocturnal mammals. The key to effectively resolving any wildlife damage is working with the landowner to determine what species of wildlife is the culprit and then assigning the appropriate mitigation strategy (such as those listed above for urban issues) based on the severity and extent of the damage.

Technical assistance from WRD biologists, including site visits, is available to agricultural producers year-round. Generally, damage to row crop plants that involves turkeys involves destroying the plants to get to insects, however, damage from turkeys has been verified in grape vineyards.

PROGRAM GOALS, OBJECTIVES, AND STRATEGIES

Population Goal: Ensure the Long-Term Conservation of Georgia's Wild Turkey Population

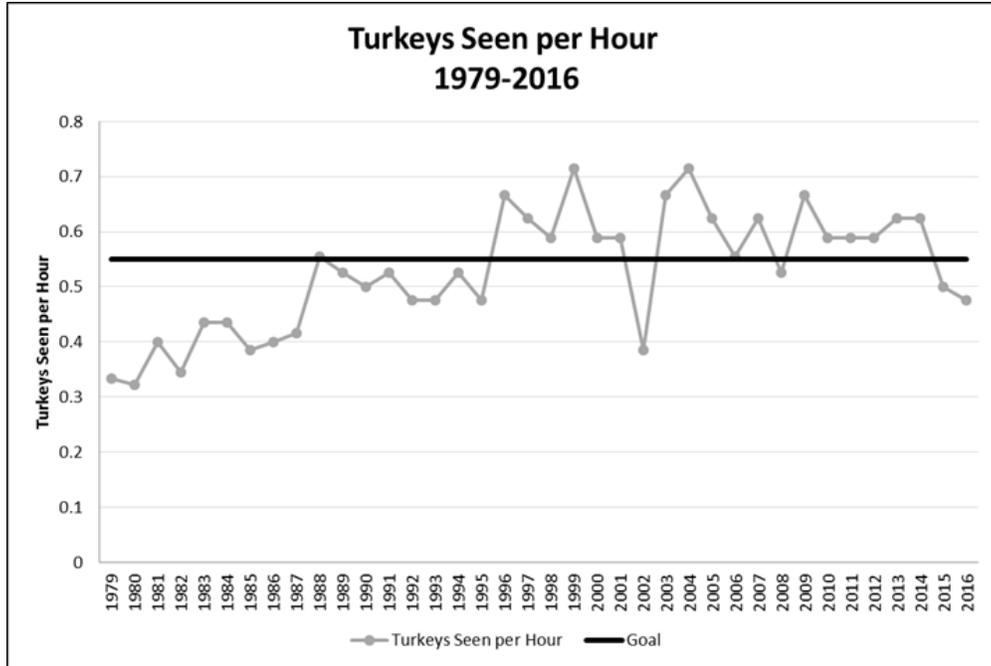
Objective: *Annually collect and analyze biological data to monitor wild turkey population trends.*

Strategies:

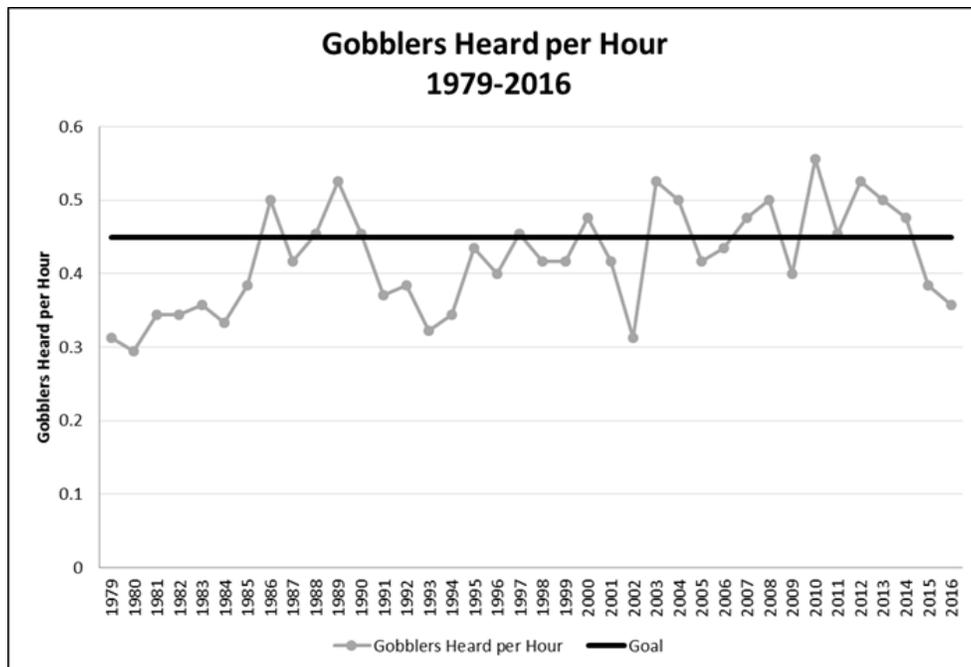
1. Monitor overall population through catch per unit effort (CPUE) indices of turkeys seen per hour from hunter survey data with a long-term goal of 0.55 over a 4-year average.
2. Monitor gobbler population through CPUE indices of gobblers heard per hour from hunter survey data with a long-term goal of 0.45 over a 4-year average.
3. Monitor female population through CPUE indices of hens per observer from the summer poult survey with a long-term goal of 3.0 hens per observer over a 4-year average.
4. Monitor Breeding Bird Survey data for long-term trends as supplemental information.
5. Periodically evaluate our monitoring techniques in order to best answer wild turkey population questions, while maintaining or improving accuracy and efficiency.
6. Explore using current technology (internet, email, phone apps, etc.) to make participation in the Turkey Hunting Population Index survey easy and available to more hunters.

Results of these population monitoring surveys are shown in the figures below.

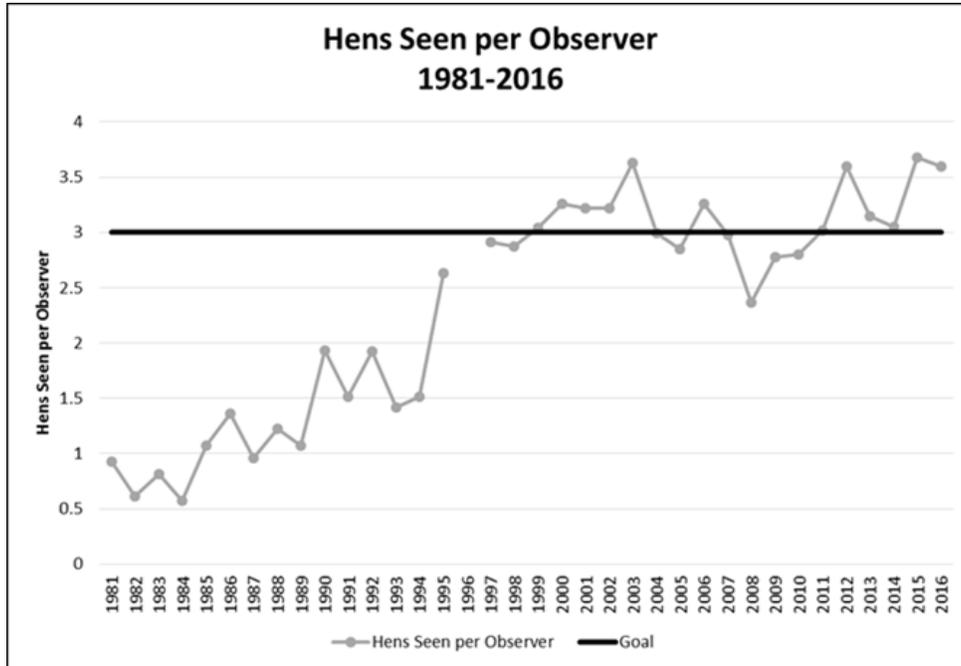
The overall population, as indexed by turkeys seen/hour, increased until the late 1990's and has remained relatively constant at about 0.55 turkeys seen/hour. WRD's long-term objective is to maintain a running 4-year average of 0.55 turkeys seen/hour.



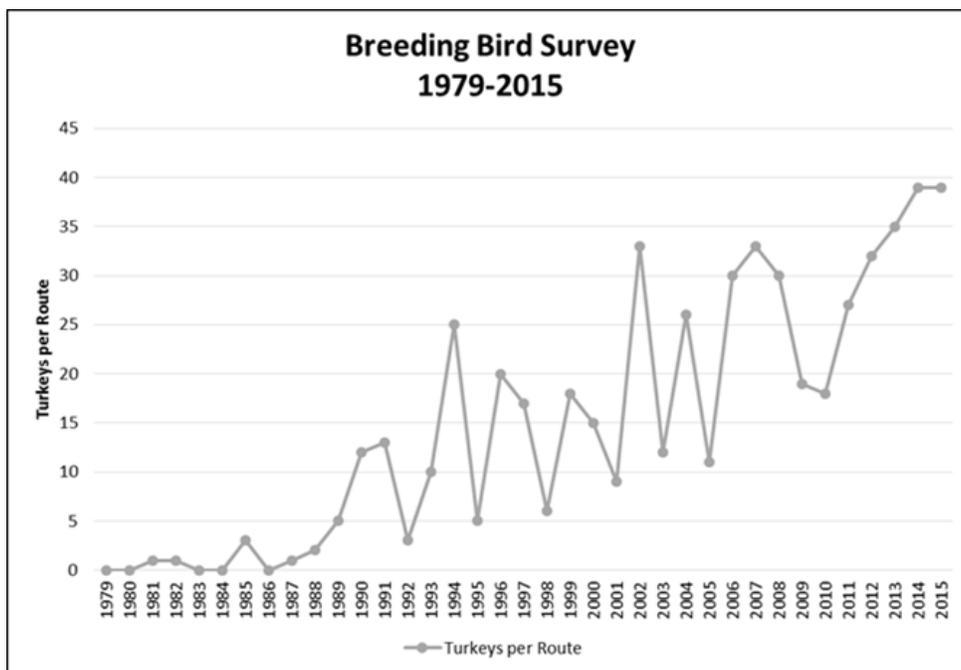
The gobbler portion of the population, as indexed by gobblers heard/hour, increased until the early 2000's and has remained relatively stable at 0.45 gobblers heard/hour. WRD's long-term objective is to maintain a running 4-year average of 0.45 gobblers heard/hour.



The female portion of the population, as indexed by hens seen/observer, increased until the late 1990's and has remained relatively stable at 3.0 hens/observer. WRD's long-term objective is to maintain a running 4-year average of 3.0 hens/observer.



The Breeding Bird Survey indicates an increasing trend (but with much variation) over the duration of the survey, especially since around 1989-1990.

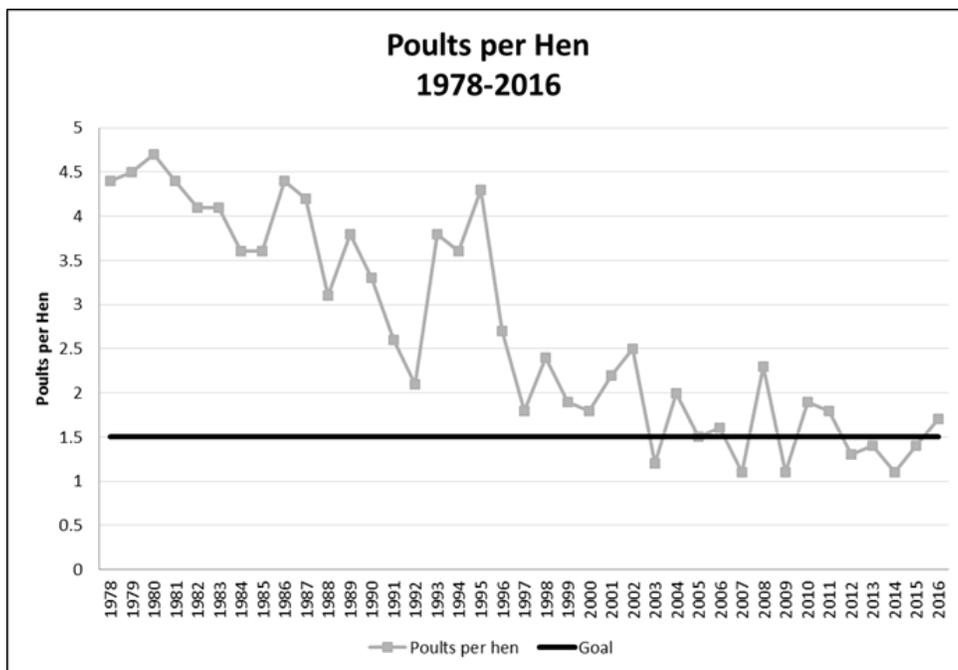


Objective: *Annually collect and analyze biological data to monitor wild turkey reproduction.*

Strategies:

1. Conduct annual brood surveys to estimate reproductive indices such as poults/hen with a goal of 1.5 poults/hen over a 4-year average.
2. Periodically evaluate our monitoring techniques in order to best answer wild turkey reproduction questions, while maintaining or improving accuracy and efficiency.
3. Explore using current technology (internet, email, phone apps, etc.) to engage citizen scientists to help with the brood survey.

Results of the Turkey Brood Survey are shown in the graph below. Poults/hen declined until the early 2000's and has remained relatively stable at about 1.5 poults/hen. WRD's long-term objective is to maintain a running 4-year average of 1.5 poults/hen.



Objective: *Monitor and mitigate potential limiting factors on wild turkey populations.*

Strategies:

1. Develop specific guidelines for private and public land managers to implement predation management programs under their approved wild turkey management plans.
2. Monitor disease issues and outbreaks in cooperation with SCWDS.
3. Continue and expand outreach efforts to educate the public on limiting factors of wild turkey populations.

Development of a predator management policy, similar to the policy currently in place for quail management, is a priority. Other tasks include the continued monitoring of disease issues in cooperation with SCWDS, and public outreach related to these issues. Example topics for public outreach and education include how to report and submit for testing dead or sick birds, and sharing the existing science regarding the low risk of disease presented by spreading of chicken litter on agricultural fields.

Habitat Goal: Increase and Maintain Wild Turkey Habitat Throughout Georgia.

Objective: *Quantify current wild turkey habitat in Georgia and increase early successional habitat by 10% on WRD-managed lands.*

Strategies:

1. Use various methods (remote sensing, staff surveys, etc.) to quantify existing wild turkey habitat on WRD-managed lands.
2. Use management techniques such as prescribed burning and thinning to improve and increase wild turkey habitat, with an emphasis on nesting cover and brood-rearing habitat.
3. On WRD-managed properties, biological staff will ensure long term plans, timber plans, and periodic reviews on state lands include practices that benefit wild turkeys.
4. Seek opportunities to assist other public land managers to conduct management practices that are beneficial to wild turkeys.
5. Continue to partner with conservation groups to promote beneficial management on public lands.

Objective: *Promote habitat management practices that sustain or increase wild turkey populations on private lands.*

Strategies:

1. Develop regional best management practices for wild turkey management for private landowners.
2. Promote and provide wild turkey management advice to landowners.
3. Update and reprint our Wild Turkey in Georgia book to distribute to interested landowners.
4. Provide accurate and timely turkey management information to various media outlets.

5. Develop a wild turkey management presentation to be used for regional program requests.
6. Provide the above referenced materials online via WRD's social media and website.
7. Continue to partner with conservation groups and other governmental agencies to promote habitat management beneficial to wild turkeys on private lands.
8. Explore opportunities to hold workshops and outreach/educational events on managing habitat for wild turkeys.

Sustainable Use Goal: Maximize Sustainable Hunting Opportunity

Objective: *Annually collect and analyze hunter harvest data to monitor trends in gobbler harvest.*

Strategies

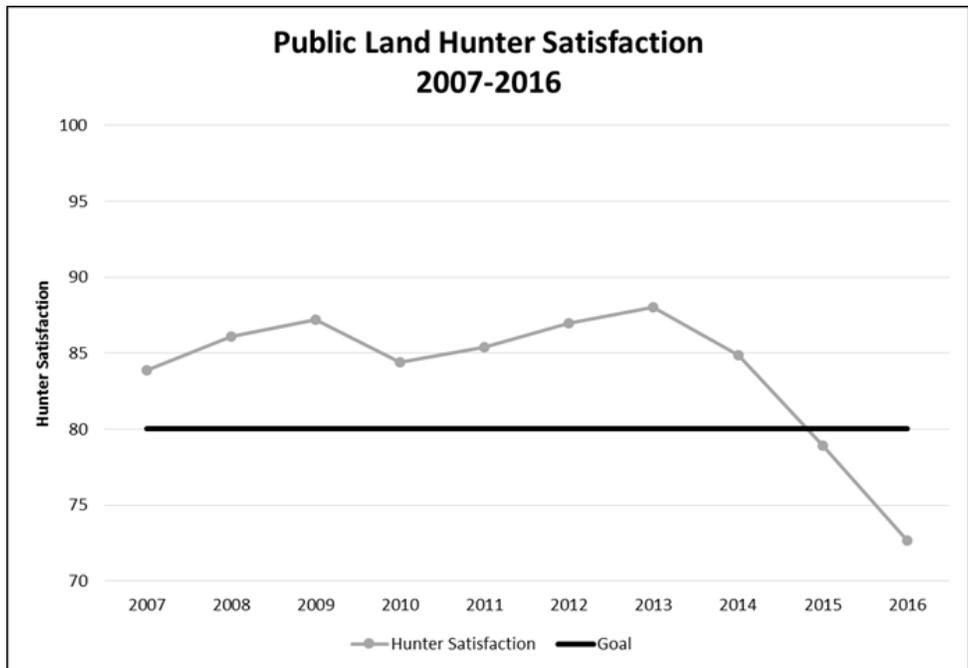
1. Use the Game Check system to collect hunter-reported harvest data.
2. Continue using a post season telephone survey to collect hunter harvest data and estimate statewide harvest.
3. Augment phone survey and Game Check data sets by using the harvest card survey to collect data from avid hunters.
4. Use the best possible statistical and analytical methods available to evaluate these data.
5. Investigate opportunities to improve hunter harvest survey methodologies while maintaining existing long term data sets.

Objective: *Provide sustainable, quality hunting opportunities on public lands.*

Strategies

1. Set scientifically informed and biologically appropriate regulations on public lands.
2. Annually monitor hunter numbers, turkey harvest, hunter success rate, and hunter satisfaction rates on WMAs.
3. Maintain hunter satisfaction rate of 80% on WMAs over a 4-year average.
4. Continue to educate the hunting population about the timing of the spring season and why we do not have a fall season.
5. Conduct periodic WMA-specific hunter surveys to determine factors related to hunt quality, effort, access, and success on the areas.
6. Work with DNR Law Enforcement Division to promote compliance with turkey hunting regulations on WMAs.

Turkey hunter satisfaction on public lands averaged about 85% between 2007 and 2014, but has dropped off the last two years to just under 75% in 2016. WRD's long-term objective is to maintain a 4-year average of 80% hunter satisfaction on public lands.



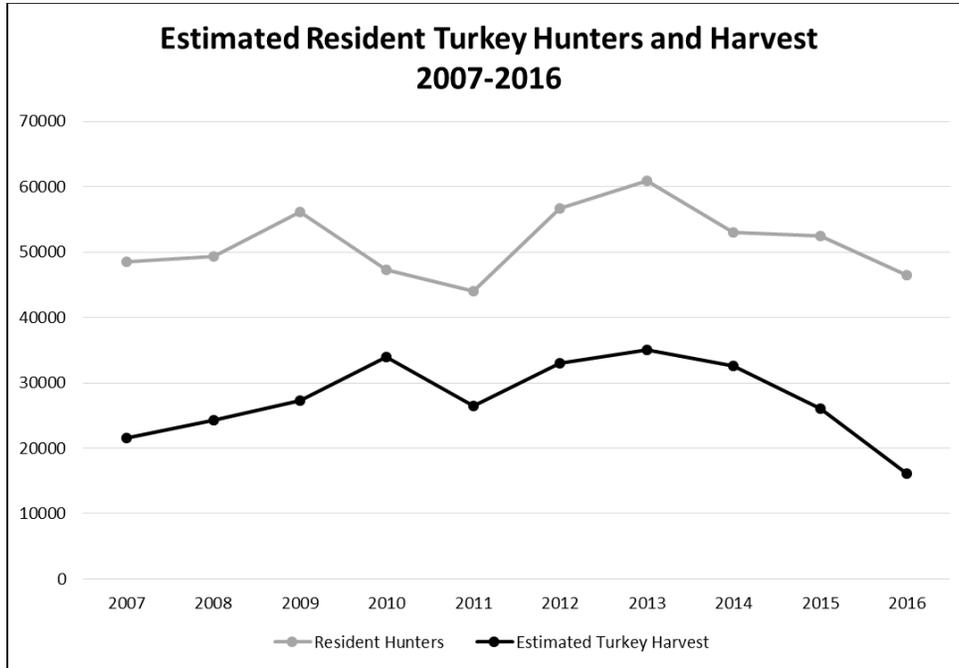
Objective: *Facilitate sustainable, quality hunting opportunities on private lands.*

Strategies

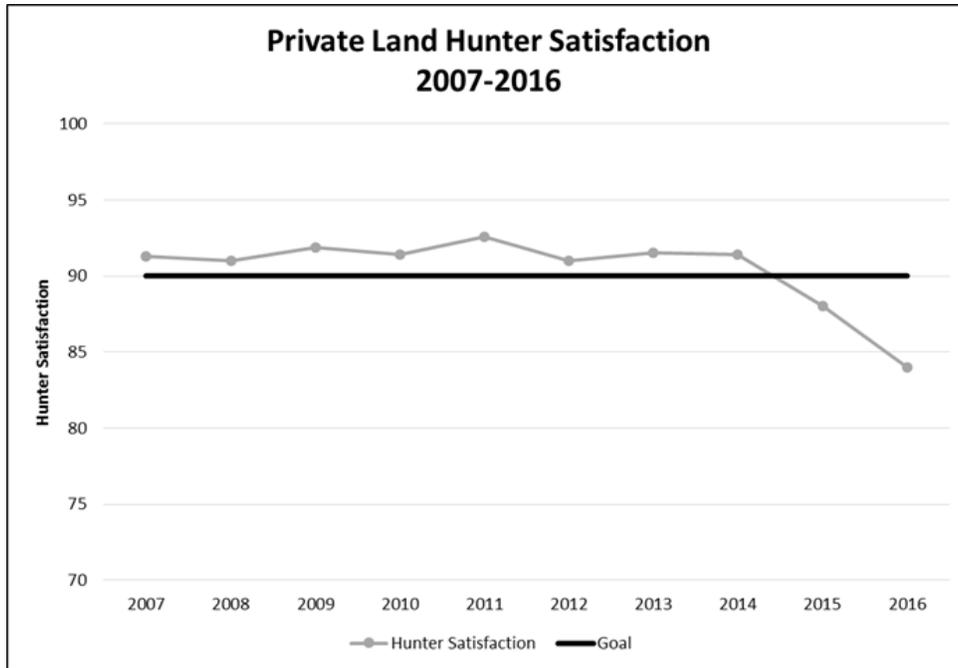
1. Set scientifically informed and biologically appropriate statewide hunting regulations.
2. Annually monitor hunter numbers, turkey harvest, hunter success rate and hunter satisfaction rates.
3. Maintain a hunter satisfaction rate of 90% statewide over a 4 year average.
4. Educate turkey hunters on private lands about levels of sustainable turkey harvest on their properties.
5. Continue to educate the hunting population about the timing of the spring season and why we do not have a fall season.
6. Promote compliance with turkey hunting regulations.

Results of WRD's Phone Survey are shown in the graphs below.

Since 2005, resident turkey hunter numbers have averaged about 54,000, with a range of 45,000 to 60,000, and the annual resident turkey harvest has averaged nearly 30,000 turkeys each year.



Turkey hunter satisfaction on private land averaged just over 90% between 2007 and 2014, but has dropped off the last two years to just under 85% in 2016. WRD's long-term objective is to maintain a 4-year average of 90% hunter satisfaction on private lands.



Objective: *Maintain or improve access for wild turkey hunting.*

Strategies:

1. Explore providing wild turkey hunting opportunities on other state managed lands (e.g., Public Fishing Areas, State Parks).
2. Encourage public wild turkey hunting opportunities on other publicly owned (e.g., county, federal) or privately owned lands.
3. Investigate financial resources and opportunities to provide wild turkey hunting access to additional lands.
4. Partner with conservation groups to improve turkey hunting access.
5. Provide turkey hunting information for various media outlets.

Research Goal: Advance the Current Base of Knowledge on Turkey Management Issues and Questions

Objective: *Initiate and support scientifically valid research projects and investigations to answer management questions and identify effective management actions that support the above listed objectives.*

Strategies

1. Work closely with the Southeastern Wild Turkey Working Group, NWTf Technical Committee, UGA & other universities to identify and design appropriate research based upon our prioritized list (Appendix C) when funding is available.
2. Support wild turkey research that enhances our understanding of the relationships among the various factors that affect wild turkey population dynamics (habitat, weather, predation, harvest mortality, non-harvest mortality, etc.).
3. Develop and utilize banding and GIS methodology for estimating wild turkey population parameters.
4. Maintain a list of research priorities for wild turkeys in Georgia (Appendix C).
5. Utilize the harvest reporting system (Game Check) to improve surveys and methodologies for managing wild turkeys in Georgia.
6. Develop popular articles and other materials related to research projects for outreach and education.

Objective: *Collect and analyze survey data to evaluate hunter attitudes and opinions on wild turkey management, regulations, and related issues.*

Strategies

1. Conduct periodic hunter surveys to determine factors related to hunt quality, effort, access, and success on wildlife management areas.
2. Conduct periodic hunter surveys to determine factors related to hunt quality, effort, access, and success across private lands.
3. Utilize various sources of data collection including telephone surveys, online surveys, and harvest card surveys.

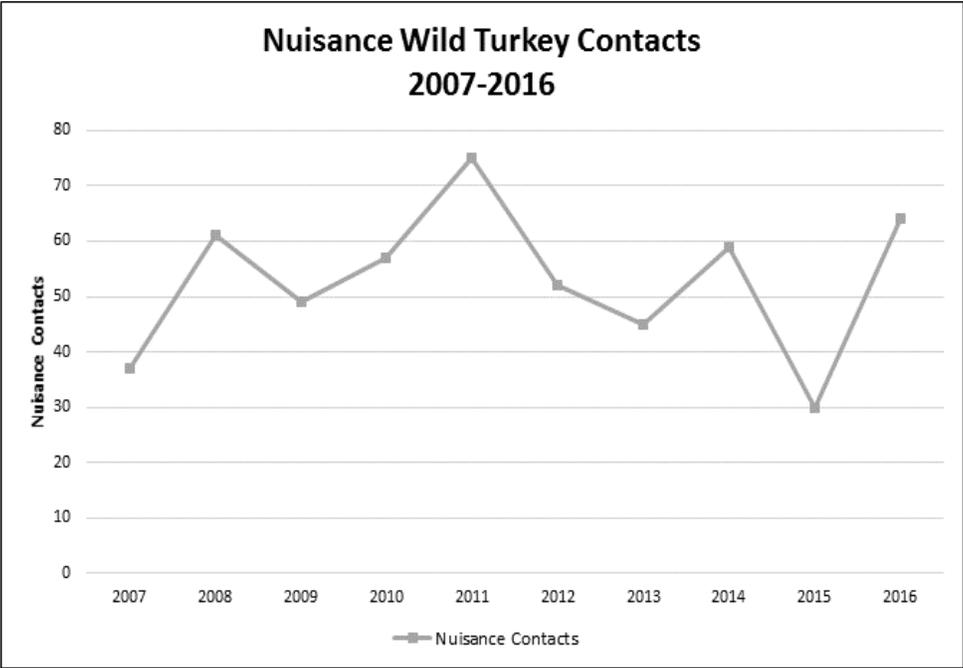
Nuisance Goal: Mitigate Wild Turkey Damage

Objective: *Minimize conflicts in urban and agricultural areas and provide guidance for mitigating damage when it occurs.*

Strategies:

1. Develop a policy for addressing human-wild turkey conflicts.
2. Create and maintain information for media outlets that includes specific nuisance abatement recommendations for wild turkeys.

WRD has handled an average of 53 nuisance calls per year involving wild turkeys between 2007 and 2016.



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Appendix B: Brood Survey Data Form

ANNUAL WILD TURKEY PRODUCTION INDEX SURVEY								
Month :				Name:				
<u>Instructions</u>								
1) Each row is for each separate turkey observation.								
2) If you see a brood record in "Broods" , but if you can't count the number of poults then leave the "Poults" column blank.								
3) If the poults in a brood can be counted, please record the "Brood" and record the number under the "Poults" column.								
4) Record total mileage driven during the month in state vehicle in appropriate space at bottom right.								
Observation	County	Hens with Poults	Broods	Poults	Hens without Poults	Hens (Uncertain of Poults)	Gobblers	Unknown Turkeys
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Totals								
Total Mileage Driven in Month:								

Appendix C: Research Priority List

- Conduct a statewide or regional gobbler banding study to determine annual survival and harvest mortality rates usable in a population model.
- Evaluate habitat management practices (e.g. prescribed burning, timber thinning) and their impacts on factors such as nest success or gobbler harvest.
- Conduct research on reproductive ecology (nesting, hatching, poult and hen survival) in the mountain physiographic province. We have recent data from the Upper Coastal Plain in southern Georgia and as of 2017 there is a new research project started in the Piedmont. We need current information in other areas (e.g., Ridge and Valley and Blue Ridge Mountains).
- Explore methods to improve or refine estimating reproductive success (Brood Surveys).
- Investigate opportunities to develop a statistically-based population model.
- Conduct research on the effects of coyotes on wild turkey populations.
- Develop a database using GIS to track weather, habitat, and land use trend changes over time. Once built, this system could be updated annually and used to evaluate relationships between these factors and turkey populations changes (other species also).

Appendix D: Public Input

SCHEDULE OF PUBLIC MEETINGS
WILD TURKEY MANAGEMENT PLAN

October 4-5, 2017

<u>Location of Meeting</u>	<u>No. in Attendance</u>
Tifton	21
Jasper	9
Statesboro	0
Forsyth	5
TOTAL	35

A total of 35 individuals attended the public meetings. In addition, 54 individuals submitted input electronically, in writing, or by telephone. Only comments about the plan were included (from 2 persons via email, 1 at public meeting).

Supports plan as written.

Thanks for the opportunity to comment on the plan.

#1 focus should be habitat conservation. Conservation tax credits should be a bigger incentive for private land owners to manage, and to reduce clear cutting large chunks of timber.

Strive to educate land owners on the benefits of managing habitat.

There should be no clear cutting on state lands; places I hunt that have been select cut and regularly burned seem to have much better nesting areas.

While not mentioned in the report, lowering limits will not accomplish anything. The average turkey hunter does not kill 3 yearly so the harvest would remain largely the same.

Agree a fall season open to hens would be counterproductive.

The hunter survey card should become a tool that is sent to all license holders. This would give the state a much larger data set to work with.

Studies of predators should continue. Coyotes are not ravaging the population, but their increased presence affects gobbling activity. The bigger issue is nest predators such as raccoons. With a lengthened deer season, fewer coon hunters can get on private lands and hunt them. There simply aren't many trappers anymore. Trapping incentives could be looked at closer.

Very nice and complete plan you are putting forthBUT, what is missing is a report (if any) pinpointing the reason for the turkey population decline though out the eastern portion of the U.S.; the problem cannot be solved without knowing precisely what is causing the problem.

After reading reading the plan, it appears the main factors are habitat first and predation second.

One of the plan's goals was an increase in habitat of only 10% on WRD lands. This number seems uninspiring, especially given the recent license fee increases. Why not have a goal to double the habitat managed for turkeys?

The plan stated that lack of capacity was a reason that so few acres can be managed on state lands. How can this be, given the projected increased revenue from the new license fee structure?

Funds for turkey conservation are being misdirected. Why use so much money on hiring so many new game wardens? According to the plan, the poaching issue doesn't seem to be that important.

In favor of research on the relationship between predator control and turkey nesting, especially in areas of good habitat.