



The Wild Turkey

In Georgia
History, Biology,
and Management



FUNDING FOR THIS PUBLICATION
PROVIDED BY
THE GEORGIA CHAPTER OF THE
NATIONAL WILD TURKEY FEDERATION

THE WILD TURKEY IN GEORGIA

History, Biology, and Management

Department of Natural Resources
Game and Fish Division
Game Management Section

AUTHORS

Reggie Thackston, Wildlife Biologist
Todd Holbrook, Assistant Chief of Game Management
Wes Abler, Wildlife Biologist
Jerry Bearden, Wildlife Biologist
David Carlock, Wildlife Biologist, Sr.
Dan Forster, Wildlife Biologist
Nick Nicholson, Wildlife Biologist
Ron Simpson, Wildlife Biologist, Sr.

The Department of Natural Resources is an equal opportunity employer and offers all persons the opportunity to compete and participate in each area of DNR employment regardless of race, color, religion, national origin, handicap, or other nonmerit factors.

©1991

PREFACE

Wildlife biologists serving on the Georgia Department of Natural Resources' Wild Turkey Committee prepared this booklet. It is intended to serve as a source of general information for those with a casual interest in wild turkeys and as a detailed guide for land managers. Each chapter has been written to stand alone with respect to the information provided. The committee hopes this booklet will serve to benefit the wild turkey resource in Georgia and help to insure its well being for generations to come.

ACKNOWLEDGMENTS

We would like to express appreciation to the Georgia Chapter of the National Wild Turkey Federation for funding printing of this booklet. We are grateful to the following individuals who provided information, suggestions, and/or editorial comments: Dave Baumann, S.C. Wildlife and Marine Resources Department; Ron Brenneman and James Earl Kennamer, National Wild Turkey Federation; Phil Hale and Sydney Johnson, Institute of Natural Resources, University of Georgia; H.L. (Duff) Holbrook, U.S. Forest Service (retired); and Ken Grahl, Joe Kurz, and Dick Whittington, Georgia Department of Natural Resources. We also thank Sonja Daniels for typing and other secretarial assistance.

Cover photo: Courtesy of Glenn C. "Tink" Smith, National Wild Turkey Federation.

TABLE OF CONTENTS

<u>HISTORY</u>	5
<u>BIOLOGY AND BEHAVIOR</u>	6
Anatomical Description	6
Differences Between Males and Females	6
Differences Between Juveniles and Adults	8
Social Groups	8
Gobbling	9
Reproduction	9
Nesting	9
Food Habits and Seasonal Movements	10
Home Range	12
<u>MORTALITY</u>	12
<u>HABITAT: THE KEY TO ABUNDANCE</u>	15
Habitat Requirements	15
Habitat Management	15
<u>FOREST MANAGEMENT</u>	16
Plant Succession	17
Site Preparation	17
Seedling Spacing	18
Thinning	19
Prescribed Burning	19
Rotation Age	20
Grazing	20
Roads	20
Stand Size, Shape, and Distribution	21
Hardwood Stands	21
<u>MANAGEMENT OF OPENINGS</u>	22
Supplemental Plantings	23
Spring "Warm Season" Plantings	23
Fall "Cool Season" Plantings	24
Perennial Grasses	25
Natural Openings	25
Agricultural Openings	25
Improved Pastures	25
Pesticides	26
Artificial Feeding	26
<u>PEN-REARED BIRDS</u>	27
<u>HABITAT CHANGE</u>	27
<u>TURKEY HUNTING</u>	28
<u>SUMMARY OF MANAGEMENT RECOMMENDATIONS</u>	30
<u>SUGGESTED PLANTINGS FOR WILD TURKEYS</u>	31

HISTORY

The Eastern Wild Turkey (*Meleagris gallopavo silvestris*) is a true native of North America. Long before discovery of the New World, their abundance made them second only to deer in value to American Indians. Turkeys were a readily available and high quality food. They also provided materials for use in other phases of daily life such as leathers for arrow fletching and fabric work, bone for small tools, and their spurs were even used for arrow points. Wild turkey bones have been found in archeological excavations of Indian settlements across Georgia.

Wild turkey was a staple in the diet of colonial settlers who were highly dependent on wildlife as a source of meat. In his writings, James Oglethorpe referred to the wild turkey and its great availability as a food in Georgia in the early 1700's. During the late 1700's, William Bartram wrote of dining on wild turkey and seeing flocks of over 100.

Habitat loss and market hunting gradually depleted the wild turkey population over its entire range. The wild turkey population in North America was at its lowest point at the turn of the century with an estimated 30,000 birds. Populations in Georgia reached their lowest level between 1900 and the 1930's.

Research and management have brought turkey populations back from these low levels. As a result of protection, relocation of wild birds, and habitat management, Georgia's turkey population numbered 17,000 by 1973.

In 1973, intensive restoration involving the relocation of wild birds to selected vacant habitat, and increased emphasis on biologically sound hunting seasons, was started. Since then, over 4,000 wild turkeys have been trapped and relocated to over 300 sites across the state.



Trapping and relocation of over 4,000 wild turkeys since 1973, have restored populations to 90% of the available habitat.

The statewide turkey population in 1991 exceeded 375,000, with birds in nearly every county including much of metropolitan Atlanta. This abundance has provided for an increase in sport hunting. In 1991 there was a spring gobbler season in 138 counties compared to 41 in 1973. State wildlife management areas with spring gobbler hunting also increased from seven in 1973 to 54 in 1991. The number of turkey hunters has likewise increased, rising from 7,800 in 1973 to 93,000 in 1991. The number of birds harvested has increased to about 45,000, up from a low of 675.

The current land use pattern in Georgia is better now from a turkey habitat standpoint than it has been in many decades. Approximately 28,000 square miles, roughly one-half of the state, are capable of supporting wild turkeys. A key factor in this improvement is the relatively large amount of forest land and bordering agricultural land, particularly pastures.

Wild turkeys now occupy 90% of Georgia's suitable habitat. The turkey population will continue to grow in many of these areas.

BIOLOGY AND BEHAVIOR

Male and female wild turkeys differ physically, socially, and from the standpoint of behavior. Before these differences can be discussed, it is necessary to be familiar with the nomenclature used to describe sex and age classes. Male wild turkeys are called gobblers and females are called hens. Males less than one year old are often called "jakes," while very young birds of both sexes are called poults. As poults mature they are referred to as juveniles.

Anatomical Description

The wild turkey is our largest upland game bird, with gobblers sometimes weighing over 20 pounds and standing three feet tall. Unlike domestic turkeys, wild birds are lean and slender with a small, nearly bare head. During the spring mating season, a gobbler's head will be red, white, and blue. At this time, gobblers have developed a layer of fat over their breast and crop cavity. This fat layer or "breast sponge" provides a rounded-breast appearance and serves as an energy reservoir during the very active mating season.

In contrast to wild turkeys, domestic turkeys are stockier in appearance and not as streamlined. Domestic turkeys range in color from white to iridescent black. Domestic "bronze" turkeys most closely resemble wild turkeys in coloration. However, tips of tail feathers and rump feathers are white on domestic birds, and are cinnamon-brown on wild birds. Feet and legs of wild turkeys are normally a shade of pink, except that on juveniles they tend to be brownish with a tinge of red. Domestic turkeys have black, purplish-black, grey, or dark red feet. In general, domestic birds are larger in size and have more pronounced head ornamentation.

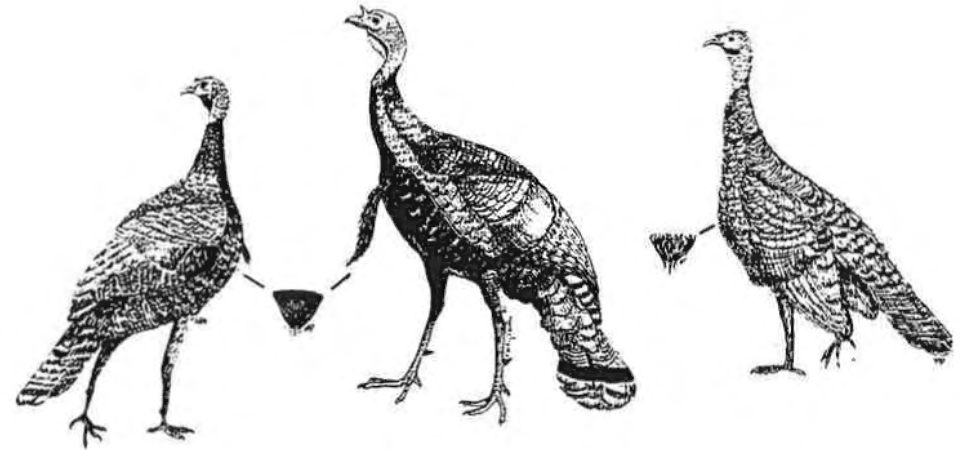
Differences Between Males and Females

Appearance of breast feathers aids in determining sex of wild turkeys. Gobblers have black-tipped breast feathers and appear almost black at a distance while hens have buff-tipped breast feathers and are more rusty or buff colored. Both sexes have body plumage that shines with iridescent shades of bronze, green, and brown in the sunlight, but this iridescence is much more noticeable in gobblers.

The head of an adult hen is partially or completely feathered whereas the male's head is comparatively bare. Also, the warty caruncles and wattles are much more prominent on males than females.

Gobblers have legs, or tarsi (the bare part of the leg between the foot and the "knee" joint), that average one and one half inches longer than those of hens. This trait is particularly obvious when they are standing together. Gobblers also have larger feet and toes than hens. A gobbler's middle toe length averages three inches between the tip of the toe and the back of the toe pad. A hen's middle toe seldom measures more than two and one-fourth inches.

Adult gobblers have conspicuous spurs on their legs. Hens usually don't grow spurs, but have only tiny, rounded scales in their place. Hens have been known to have spurs, and spurless gobblers have been documented as well; however, these occurrences are rare.



JUVENILE GOBBLER

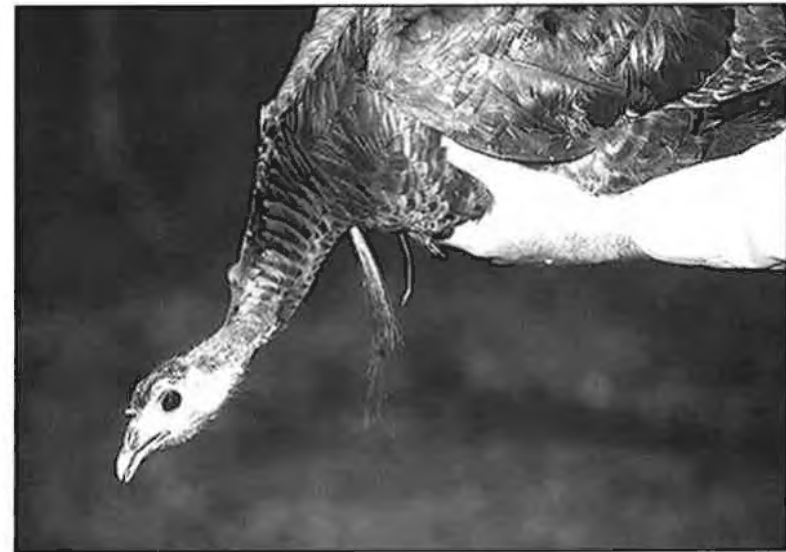
ADULT GOBBLER

HEN

Artwork by Kathy Darley

The sex of a turkey can be determined by the shape of the droppings. Gobbler droppings are straight or J-shaped, while hen droppings are round or corkscrew shaped.

Gobblers have beards which are actually modified feathers. The beard is hair-like in appearance and protrudes from the breast. Using a turkey's beard to distinguish sex is not always reliable because beards occasionally occur on hens. Beards on hens are usually thinner than gobbler beards and seldom exceed eight inches in length. Bearded hens are capable of normal reproduction.



Beards on hens are thin and seldom exceed eight inches in length. Fewer than 10% of all hens have beards.

PHOTO BY
JAY LANGSTON,
NATIONAL WILD
TURKEY FEDERATION.

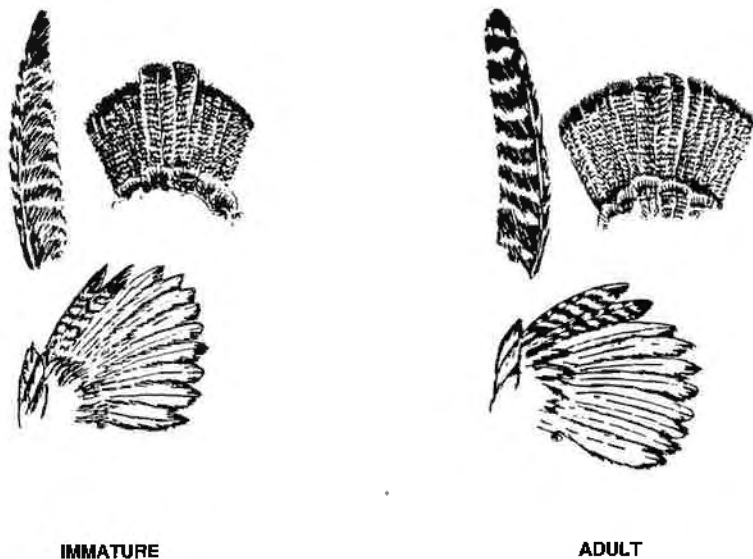
Differences Between Juveniles and Adults

Weights vary with sex and age. During late winter or early spring, jakes weigh 12 to 15 pounds. Adult gobblers typically weigh from 16 to 20 pounds, but have been documented at over 30 pounds. Hens seldom weigh more than 12 pounds. Beard length is indicative of age; however, it is not as reliable as other aging techniques due to variable growth and wear rates. Jakes seldom have beards more than six inches in length while adult gobblers normally have beards that are eight to 10 inches, or longer.

Spur length and shape are better indicators of age than beard length or body weight. Spurs continue growing throughout life. They wear off and become sharper as the birds age. Jakes have nubs or buttons and two-year-old gobblers normally have spurs that are one-half to one inch in length. Gobblers three years old and older usually have spurs that are one inch or more in length with varying degrees of sharpness and curvature.

Central tail feathers and flight primaries are reliable for distinguishing between adults and juveniles. The last two outer wing primaries of juveniles are pointed and gray-brown near the tip, while on adults they are smooth and rounded. Adults also have white bands or bars that extend to the tips of the feathers. The central tail feathers extend beyond the others on juvenile birds.

In summary, males and females may be accurately separated into two age classes, i.e. juveniles and adults. In addition, gobblers may be classified, with a fair degree of accuracy, as two years old, three years old, and older.



Artwork by Kathy Darley

Social Groups

Wild turkeys are naturally gregarious, forming flocks based on sex, age, and social dominance. Hens with broods often join other hens with broods forming larger flocks. Hens without broods, or hens that were unsuccessful in raising broods, often do not join the larger family flocks.

By late summer and early fall, the poults are quite large. Jakes have outgrown adult hens, creating social problems in the flock, and often leave the family flock by winter. In general, by winter there are four types of flocks: 1) adult gobblers 2) jakes 3) brood hens with female offspring and 4) adult hens without broods. Occasionally there will be variances or crossovers in social groups. At times jakes will be tolerated by adult gobblers or may be allowed to remain with the hens. Also, adult hens without broods sometimes join hens with broods.

Gobbling

By late February and early March, winter flocks break up, and gobbling intensifies. Gobblers, and especially jakes, gobble sporadically throughout the year, although most gobbling occurs in the spring. Spring gobbling establishes dominance between gobblers and attracts hens for mating. Two peaks of gobbling normally occur during the mating period. The first peak is due to the increase in day length and the availability of hens. As hens become receptive and respond to the gobblers, gobbling diminishes. Later, as a majority of hens begin incubating, gobbling increases and reaches a second peak, often higher than the first. The spring turkey season in Georgia is set to encompass both peaks in gobbling activity.

Reproduction

Reproduction of the wild turkey has been studied intensively during the past 25 years. The development of radio telemetry has greatly aided this effort and has provided invaluable insight regarding the behavior of turkeys. Turkeys are promiscuous, and a gobbler may mate with several hens. When a hen becomes receptive she will crouch, allowing the gobbler to "tread" her back, thereby facilitating copulation.

While most hens, including juveniles, attempt to nest, only about 30% - 50% are successful in hatching a brood. Poult mortality is high during the first few weeks of life and may average 50% - 80%. Compared with many other wildlife species, wild turkeys have a high recruitment rate and, under good habitat conditions, may more than double their population number each year until they reach carrying capacity.

Nesting

In Georgia, hens begin nesting in March; however, most nesting takes place in April and May. Some nesting occurs during the summer months, but this is usually re-nesting by hens that were unsuccessful on earlier attempts.

Turkeys nest on the ground in a variety of cover types. They prefer dense brush or other concealment. Old fields, rights-of-way, and areas adjacent to roads are favored nesting areas; however, hens also nest in mature open woodlands. On the average, 50% of nesting hens lose their nests annually. Predators and inclement weather are the primary causes of nest failures. Since a gobbler's sperm lives for more than 50 days in the oviduct, hens that have their nest destroyed can re-nest and produce fertile eggs without mating again.

Clutch size averages 10 to 12 eggs. Hens normally lay one egg each day, occasionally skipping a day. Recent investigations show that most laying occurs in the mornings with hens spending more time at the nest each time an egg is laid.



Wild turkey eggs are speckled brown and about one quarter larger than chicken eggs.

Once laying is complete, incubation requires about 28 days. In the early stages of incubation, some hens will abandon the nest if disturbed. As incubation continues, hens tolerate more disturbance. While incubating, hens stay on the nest at night and rarely leave the nest more than once daily. During this time they are especially vulnerable to predation.

Near the end of incubation, the poults inside the eggs begin to make sounds and vibrations. The hen clucks to the hatching poults and the poults chip their way out of their eggs using a temporary "egg tooth" located on the tip of the upper beak. Hatching requires 24 to 36 hours. The poults imprint on the hen, the hen calls the poults from the nest, and they never return. Adult hens are more successful than juveniles in hatching and rearing broods. Gobblers do not assist hens with incubation or brood-rearing.

Food Habits and Seasonal Movements

Wild turkeys need a diverse habitat to meet their yearlong food requirements. Turkeys stay on the move and feed throughout the day. These daily feeding activities may cover several miles, depending on food availability.

Wild turkeys eat just about anything that is small enough to swallow. They have a varied diet as shown by food habit studies in Virginia that listed 354 species of plants and 313 species of animals eaten by turkeys. Most of the food consumed is swallowed whole. The turkey's crop can expand to store more than a pint when full, before passing food through the digestive system.

The diet of wild turkeys consists of about 90% plant material and 10% animal matter. Fruits (called mast), insects, green leaves, seeds, and buds are some of the more important foods in their diet. Cultivated crops such as corn, grain sorghum, chufa tubers, and brown-top millet also are preferred. Food selection is seasonal depending on preference and availability. The following table lists major food categories by seasons of the year.

WILD TURKEY FOOD BY SEASON

SUMMER

Soft Mast
Insects
Greenery
Grass/Weed Seeds

FALL

Grass/Weed Seeds
Insects
Hard Mast
Soft Mast
Greenery

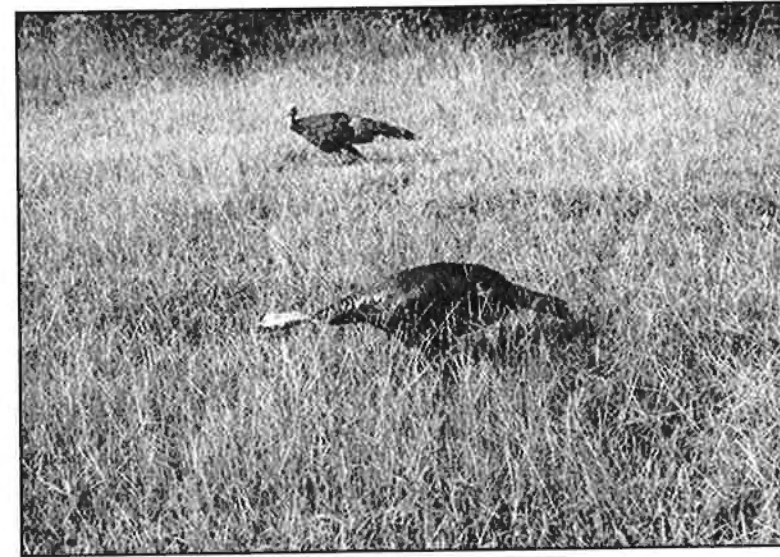
WINTER

Hard Mast
Greenery
Insects
Soft Mast

SPRING

Greenery
Insects
Hard Mast
Soft Mast

During the spring, wild turkeys move from forested areas to more open areas that provide nesting and brooding habitat. A shift in diet occurs at this time as hens feed heavily on green plant material just prior to nesting. Green plants like clovers and vetches are excellent sources of Vitamin A and protein, which are important in reproduction. In some years, acorns are still available and readily eaten. Insects become increasingly important as spring progresses.



Grassy openings provide an abundance of insects and grass seeds for young turkeys.

During the summer, food habits may differ between adults and poults. Shortly after hatching, hens move their broods to areas that offer good foraging for insects. Preferred brood range includes grassy openings, old fields, pastures, and rights-of-way. Young poults require a diet high in protein and in summer months feed on insects to meet this requirement. During this period animal foods make up to 75% or more of their diet. Grasshoppers, leaf hoppers, and beetles are important insects consumed by wild turkeys. Other protein sources include spiders, snails, lizards, and salamanders. Blackberries, blueberries, and other fleshy fruits are eaten when available. Grass seeds are a particularly important food item during summer and early fall.

During the fall, turkeys continue to feed heavily on insects and a wide variety of seeds. As acorns and other mast become available they shift their daily activities from fields to mature forest.

During the winter, high energy foods are needed. Where available, acorns make up about 40% to 60% of a turkey's winter diet. Acorns are probably the most important winter food for wild turkeys since they are high in digestible energy. Grapes, dogwood and blackgum fruits, pine seeds, beechnuts, wild cherries, hackberries, and greenbrier berries are other preferred winter foods. In the late winter months, hens and gobblers both feed heavily on green plant material.

Seasonal movements change in response to food availability and changes in social behavior. In order to support a turkey population, the habitat must meet the needs of both sexes and all age classes during all seasons of the year.

Home Range

A turkey's home range is the total area covered during the year for feeding, nesting, and mating. Recent studies have shown normal daily movements of one to two miles covering 200 to 1,000 acres. However, annual home ranges in excess of 12,000 acres and movements of more than 15 miles have been documented.

Researchers tracking the movements of gobblers and hens have come to different conclusions about home ranges of wild turkeys. In some studies, hens had larger annual home ranges than gobblers, while in other studies the reverse was true. In general, gobblers tend to have larger home ranges than hens during the spring.

For many years, biologists believed that turkeys needed at least 15,000 acres of suitable habitat for successful management. More recent findings show that in areas of quality habitat, management can be successful on a much smaller area.

MORTALITY

The mortality rate is a measure of the percentage of animals within a population that die within one year. For any population to maintain itself, mortality must be offset by natality (the number of births over the same period of time).

Wild turkey clutches are fertile, with hatching rates over 90% for eggs successfully incubated. But successful hatching is just the first step in a series of obstacles that poults face, where just keeping up with others in the flock may be the difference between life and death. In fact, of the deaths that occur during the first year, up to 80% will happen during the first two to three weeks after hatching. Once the poults reach flight stage survival rates improve dramatically. For this reason, the success of a wild turkey population is largely determined by habitat conditions that influence poult survival.

Predators can cause the loss of large numbers of poults, but the effects of predation on turkey populations will vary greatly by area and year. The impact of predators on poult survival is influenced by habitat quality, the number of predators, and the number of poults. If many poults are produced, the chances are greater that some will come in contact with predators. However, the impact of predation on the turkey population may not be great because enough poults still survive. Hawks, owls, foxes, coyotes, and bobcats all prey on poults. Domestic dogs that are allowed to run free also contribute heavily to poult losses.



Domestic dogs can contribute heavily to poult losses.

An area may support high populations of predators without depleting the turkey population if cover and alternative prey are abundant. Most predators are opportunistic and will take whatever is easiest. Rabbits, rats, mice, and other small mammals and birds are potential food sources for predators. Without sufficient escape cover, broods are vulnerable to predation, even in areas with low predator populations. The arrangement and location of escape cover, nesting cover, and brood range is important. If brood range is not close to nesting cover, hens and poults must travel the necessary distance to these areas. This journey increases the risk of predation, accidents, and other types of mortality.

Weather also affects poult survival. Heavy rain, while poults are still in natal down, causes poult losses because of sickness, exposure, and exhaustion. Extended summer drought causes green vegetation to dry, with a coinciding loss of insects and seeds that are vital to the growth and development of poults. In general, weather conditions that are abnormal for any particular season may increase the mortality rate.

Life is not easy for young turkeys and large numbers of poults never survive to adulthood. Radio telemetry studies have shown that poult losses from 50% - 80% occur during most years. Established turkey populations, however, are able to maintain themselves even with these seemingly high losses.

Once a turkey passes the critical first few weeks, its chances for survival are greatly increased. Rapid growth of poults to adult size enables them to escape from many predators. During the spring and summer hens are more vulnerable to predation than gobblers because of the time they must spend laying and incubating eggs and rearing broods. Studies of predation on hens during incubation and the two weeks following hatching have shown losses ranging from one percent to 20%. Foxes, bobcats, dogs, and coyotes are the major predators of adult turkeys. Annual losses to the adult turkey population range from as low as 10% to as high as 50% on the same area during different years.

By the time a turkey reaches adulthood, it has developed the skills and instincts necessary to escape many of life's threatening situations. However, a turkey has few defenses against the variety of parasites and diseases it contracts. The most important of these is a small cecal worm (*Heterakis gallinarium*). The worm itself causes few problems but within its egg may be the protozoan, *Histomonas meleagridis*. This protozoan is the causative agent of blackhead, a disease that has caused high losses in some turkey populations.

Domestic turkeys, chickens, and bobwhite quail can carry blackhead but are resistant to the disease and may transmit it to wild turkeys. The potential of infecting wild turkeys with blackhead or other poultry diseases should be considered while allowing domestic poultry to range on areas used by wild turkeys. Releasing pen-reared quail or turkeys into areas with a wild turkey population is also a potential source of infection.

Other diseases that may affect turkey populations include coccidiosis, trichomoniasis, botulism, fowl cholera, mycoplasma, and fowl pox. At least 34 species of parasitic worms have been found in wild turkeys. Parasites rarely cause death by themselves but they can contribute by weakening birds and making them more susceptible to predation or disease. Mortality rates from diseases will vary depending on population density, physical condition of the birds, and the virulence of the disease agent.

Accidents also contribute to the mortality rate of wild turkeys. Accidents range from birds hit by motor vehicles to birds being impaled by sharp limbs while escaping some other danger. These kinds of deaths can be expected in any free-ranging and active animal population and are seldom a limiting factor.

The illegal taking of turkeys is harmful to local turkey flocks. The failure of some early turkey stockings in Georgia has been attributed to poaching activities. Poachers may think their actions don't hurt, or that in some way they are justified. Collectively, however, they can seriously affect a flock's ability to maintain itself, and this criminal and unethical activity has a negative impact on the image of hunting and hunters.

Hunting regulations, based on sound biological information, are designed to allow the removal of some birds without significantly affecting the population as a whole. Studies have shown that spring gobbler hunting may remove 10% or more of the total flock each year. The hunting season in Georgia is timed so that the removal of some gobblers has no adverse effect on the successful breeding of hens.



Regulated spring gobbler hunting has no adverse impact on turkey populations. Additionally, turkey hunters generate over \$28 million annually to Georgia's economy.

HABITAT: THE KEY TO ABUNDANCE

Habitat Requirements

Wild turkeys, like all wildlife species, have specific habitat requirements. Their habitat needs vary by season of the year and by sex and age. For example, turkeys may use mature timber stands in the fall but switch to grassy openings in the spring. It is important to understand habitat requirements before implementing land management practices.

In Georgia, as one travels from the mountains to the coast the vegetation or habitat cover types change. However, there are certain structural characteristics that are preferred by wild turkeys across all cover types. In general, quality habitat is comprised of sawtimber-sized stands of hardwoods and conifers, interspersed with weedy or grassy openings. These timber stands should be relatively open underneath, i.e. have open understories. Midstories, i.e. the middle layer of the forest canopy, should be well developed with trees and shrubs that produce both soft and hard mast.



Quality turkey habitat is comprised of sawtimber sized stands of hardwoods and conifers interspersed with grassy openings.

In the fall and winter, mature hardwood stands provide mast such as acorns, dogwood and blackgum fruits, and beechnuts. Mature conifer stands serve as roosting cover, especially during periods of inclement weather, and pines provide seed which is a preferred fall food. Openings and timber stands with lowgrowing grasses and forbs provide green vegetation that is a nutritious food for nesting hens. Open areas also produce insects and grass seeds, which are major food items for poults during late spring and summer.

Habitat Management

Habitat management involves manipulating the various habitat components of food, cover, and water over a given land area. The first step toward producing quality turkey habitat is careful planning. Planning should occur before management practices are initiated to prevent costly mistakes and needless expenditures.

A detailed inventory of habitat conditions is essential for management. Since turkeys have large home ranges, the inventory should encompass lands to be managed plus adjacent lands and should include the acreage and location of timber types, openings, ponds, and streams. The approximate age of timber stands, along with understory and midstory characteristics, should also be considered for all areas under management. With this information, a map can be drawn depicting the location and distribution of all the various cover types. This map can then be used to identify cover types that are in greatest need of improvement.

Habitat management has the objective of increasing the carrying capacity and/or concentrating birds for hunting and observation. To increase the carrying capacity, management must be directed at factors that are limiting population growth. For example, providing additional fall food will not increase the population if brood habitat is the factor limiting population growth. Georgia DNR wildlife biologists are highly trained professionals who can assist landowners with developing detailed habitat management plans.



Georgia DNR wildlife biologists can assist landowners and managers with development of land management plans.

FOREST MANAGEMENT

Eastern wild turkeys are birds of the forest, therefore, timber management determines the quality of their habitat. Management for maximum economic return seldom provides optimum turkey habitat. However, through careful planning timber can be managed for acceptable returns, while meeting turkey habitat objectives.

All-aged and even-aged are the two primary systems of forest management. All-aged

management results from harvesting a portion of a timber stand by selection of individual trees or small groups of trees throughout the life of a stand. The stand will then be composed of trees of all ages. When appropriately applied, this is the most complex and intensive method of forest management. It requires the most roads and reduces options for prescribed burning. It is best suited for shade tolerant tree species.

On the other hand, even-aged management is the most commonly used forest management method. It results from the harvest and regeneration of entire stands of trees at a given point in time, called the rotation age, creating a new stand of trees of the same age. Properly applied even-aged management provides a variety of habitat conditions, increases prescribed burning options, and is well suited for shade intolerant tree species like southern yellow pine and several important hardwood species. Regeneration methods for even-aged management include seed tree, shelterwood, and clearcutting.

Regardless of whether all-aged or even-aged management is being used, the quality of the turkey habitat depends on the diversity or variety of vegetation types that occur within and between timber stands. Within a specific stand, diversity is determined by plant succession as influenced by the age of the stand, site preparation, type of regeneration, tree spacing, thinning, prescribed burning, rotation age, herbicides, grazing, and roads. Overall, the diversity of forested habitat is influenced by the size, shape, distribution, and species composition of timber stands. Here is a detailed look at each of these factors and how they influence the quality of turkey habitat.

Plant Succession

Succession is the gradual and sequential replacement of one plant community by another over time. It is important since the use of a particular area by turkeys is influenced by the density, composition, and abundance of the plant species present. The harvest and regeneration of a timber stand sets back or begins plant succession. For the first three to four years after timber harvest and/or site preparation, a site will be dominated by annual plants and grasses. Turkeys use this grass-forb stage primarily in the spring and summer for strutting, feeding on spring greenery, and brood rearing. Timber stands of four to 12 years will be dominated by woody vines, shrubs, and young trees. The interior of these brush-stage stands is used infrequently by wild turkeys because the vegetation is too dense. However, brush stage stands are used as escape cover, and hens use the edges of these stands for feeding and nesting during the spring and summer. From age 12 until the entire stand is harvested, the quality of the turkey habitat is influenced by intermediate forestry practices such as thinning and prescribed burning. These practices will be described in detail later.

Site Preparation

Techniques for preparing sites for regeneration vary in intensity from those of low intensity, like winter burning, to those of high intensity, like shearing - raking - piling - burning. The intensity of site preparation greatly affects plant succession. Intense mechanical methods destroy root systems of woody plants and thereby decrease the abundance of mast producers. Less intense methods tend to leave woody plant root systems intact and thereby favor mast producers.

Herbicides may be used for site preparation, as well as later in the life of the stand, to retard or kill competing vegetation. The impact of herbicides on turkey habitat can vary greatly depending on the herbicide used and how it is applied. In general, any broadcast

application of herbicide that eliminates a substantial percentage of the mast producing plants will be detrimental to turkeys. On the other hand, herbicides used on a selective basis to control the abundance of undesirable plant species may improve turkey range.

The thoroughness of site preparation is also an important consideration. Windrows, streamside zones, and buffer strips of mature timber can enhance diversity within a stand. Windrows produce soft mast species like blackberry, blueberry, greenbrier, and wild grape that are important turkey foods. Maintaining mowed strips beside windrows encourages their use by wild turkeys.



Windrows and strips of mature timber provide food and travel corridors for turkeys in young timber stands.

Streamside zones and buffer strips of mature timber left within a stand provide a diversity of mast production and serve as travel corridors to extend turkey use into or across the interior of the stand. They also provide excellent edge habitat for nesting hens. A good rule of thumb is to leave streamside zones and buffer strips at least 300 feet wide to insure adequate shading necessary to maintain open understory conditions.

Seedling Spacing

The re-establishment of a stand requires artificial or natural regeneration. Seedling spacing determines the number of years until the crowns of the trees overlap and shade out the understory. With artificial regeneration, wide spacings such as 8' x 10' or 8' x 12' allow soft mast producers to become well established prior to crown closure. Also, wide tree rows facilitate the use of a tractor for mowing and/or planting between rows, thereby, increasing the use of the stand interior during the brush stage.

Natural regeneration by seed tree or shelterwood often results in seedling stands too thick for use by wild turkeys. In this case seedlings should be thinned precommercially or by the skidding of residual seed or shelterwood trees at the time of their removal.

Thinning

Thinnings can be used in pine stands to improve turkey habitat, upgrade the quality of the timber stand, and provide economic returns. For wild turkeys, stands should be thinned to create a patchy growth of herbaceous plants and woody shrubs. Too much thinning will result in a thick understory growth. A good rule of thumb is to thin so that 20% - 30% of the ground is in direct sunlight at high noon. In forestry terms, this corresponds to a basal area that is 10-15 square feet below the 50 year site index. An alternative for first commercial thinnings is to cut out 12 foot skidder corridors at 70 foot intervals. Then selectively thin between corridors leaving the best trees on a 15 - 25 foot spacing. Thinnings should begin as soon as the crowns of the trees begin to overlap and continue throughout the life of the stand, whenever crown closure occurs. Prescribed fire should be used in conjunction with thinnings to maintain desirable understory conditions.

Prescribed Burning

Prescribed burning is one of the most cost efficient and effective tools available for managing both timber and turkey habitat. Prescribed fire increases insect abundance, soft mast production, and the quantity and nutritional quality of other important foods. In general, pine stands should be burned on a three or four year cycle where one-third or one-fourth of the burnable woods are burned each year. Prescribed burns should be conducted in December through February under moisture and wind conditions necessary to create a patchwork effect from the fire. Burning should begin in pine stands as soon as possible. Usually burns can be safely conducted when the pines are 10-12 feet tall. Timber stands managed under all-aged systems require special consideration for prescribed fire. Young regeneration areas, which will be scattered throughout the stand, must be protected by firebreaks prior to conducting prescribed burns. An exception to this would be in the longleaf pine type where seedlings in the "grass stage" should be burned to control brown spot disease. The Georgia Forestry Commission should be contacted before conducting prescribed burns.



Thinning and prescribed burning pine stands improves understory conditions for wild turkeys.

Hardwood stands should not be burned as this may lead to tree injury which encourages damage by insects and disease. Also, repeated burning reduces the vigor of hardwoods.

Traditionally, prescribed burning has not been used in the Appalachian Mountains due to steep slopes and unpredictable wind patterns. However, prescribed fire may be used in the mountains to open up dense thickets of mountain laurel and rhododendron.

Prescribed fire can be used on a localized basis to enhance brood rearing habitat. For example, small portions of pine stands can be heavily thinned and then burned on a one to two year cycle to maintain a "grassy" ground cover 10 to 30 inches in height. Prescribed fires can also be used to maintain old fields in an open and productive condition by burning on a two or three year cycle.

Annual burning and frequent thinning are sometimes applied to extensive acreages of pine stands to improve habitat conditions for bobwhite quail. This is especially common in the coastal plain of southwestern Georgia. This type of management eliminates many understory mast producing plants and may create habitat conditions that are too open and homogeneous for wild turkeys. In these situations, if turkeys are part of the management objective, steps should be taken to vary the intensity of the thinning and frequency of burning over portions of the area.

Rotation Age

Sawtimber rotations (60+ years for pine, 100+ years for hardwood) are best for wild turkeys. Stands under long rotations have a greater percentage of the total stand life in suitable habitat conditions. They also offer greater flexibility in management. However, huntable populations of wild turkeys can be maintained on areas under short rotation management, if careful planning occurs to insure adequate habitat diversity. When short rotations are used, special consideration must be given to location, distribution and size of regeneration areas, travel corridors, and mast producing hardwood stands.

Grazing

Grazing cattle or other livestock in woodlands can impact turkey habitat conditions. In most situations light grazing during June through August is beneficial in keeping the understory open and stimulating the growth of grasses and forbs. However, high stocking levels of livestock in woodlands, for long periods, can detrimentally affect turkey habitat. Cattle should not be grazed in woodlands during the fall and winter months nor during the turkey nesting season.

Roads

Roads are a necessary part of timber management. Roads can be used to improve turkey habitat by clearing 10-15 feet on each side and managing by mowing and/or planting clovers and grasses. Temporary roads can be closed and managed as long, linear food plots. Roads with a north-south orientation are best suited for planting as they receive the most sunlight during the growing season. Managed roads serve as travel corridors and feeding areas allowing turkeys to access or cross timber stands that might otherwise be avoided.

To deter poaching and other types of human disturbance, roads should be gated or barricaded. Food plots should not be located adjacent to roads with unrestricted public access. If this does occur, the view from the road should be screened with trees and shrubs.



Temporary roads can be closed and managed as long, linear food plots.

Stand Size, Shape and Distribution

In general, habitat values for wild turkeys are enhanced by small, long and narrow timber stands with irregular boundaries. These stands increase edge habitat which occurs when two or more vegetative types meet. Habitat edges have greater diversity than stand interiors and are most used by turkeys and other wildlife.

Stand size for wild turkeys should be 100 acres or less with 20 to 40 acre stands being preferred. However, shape and distribution are more important than size. As previously mentioned stands in the brush stage are often avoided and in fact may serve as barriers to wild turkeys. For this reason a good distribution of stands by timber type and age class is critical. In general, no more than one-third of an area should be occupied by stands in the 0 to 20 year age class. Even then, planning should insure that young stands are well distributed and are separated by older stands with open understories. When this is not possible a network of travel corridors should be used to provide diversity and facilitate movement of birds throughout the area.

Hardwood Stands

Mature hardwoods such as oaks, blackgums, sweetgums, dogwoods, beech, and others produce mast that is heavily utilized by wild turkeys during the fall, winter and spring. While a variety of mast is needed, acorns are the most important.

Acorns are high in digestible energy necessary for over-wintering and reproduction. In a sense acorns are "mother nature's corn". A good rule of thumb for quality turkey habitat is to have at least 20% of an area in mature hardwood of which oaks comprise 50% or more of the larger trees. Most oaks do not produce substantial amounts of acorns until they are 40+ years of age, with 14+ inch diameters and well developed crowns. A mixture of both red and white oaks is important to maintain consistency in acorn production. Red oaks average good to excellent production during one of three years and white oaks during one of five years. However, seldom are there years when all acorn production fails over large geographic areas.

In addition to mast production, mature hardwood stands are valuable to wild turkeys for other reasons. The open understories typically associated with these stands are conducive to movement, feeding, and social interaction. Hardwood stands growing on moist sites often have a lush herbaceous ground cover which provides spring greenery and early brood rearing habitat. Decaying hardwood leaves support an abundance and diversity of insects and store mast and other seeds.

The value of a particular hardwood stand to a turkey population depends on the structure and composition of the stand relative to that of surrounding stands. In addition, differences occur between physiographic regions with respect to which sites are best suited for hardwood management. In the mountains, critical hardwood components often occur on north and east slopes and in coves. In the piedmont, midslope hardwood stands may produce the greatest abundance of mast while bottomland hardwoods provide both mast and brood-rearing habitat. In the coastal plain, hardwood bays, bottomland hardwoods, and scrub oak uplands can all be critical in maintaining turkey populations. The extensive conversion of hardwood to pine will result in habitat degradation and the eventual decline of the turkey population.



Mature hardwoods are critical to quality turkey habitat. In the piedmont, midslope hardwoods often produce the greatest abundance of mast.

MANAGEMENT OF OPENINGS

Turkeys are wide-ranging and need both woodlands and openings to meet year-round habitat requirements. Overall, at least five to 10 percent of the total woodland habitat should be in some type of openings. However, a lower percentage of the area in openings can still be beneficial. In general, openings should be from one to five acres in size, even though turkeys often utilize small one-fourth acre openings or even large pastures or clearcuts.

The most important considerations are how the openings are distributed, and how effectively they are managed to meet the seasonal needs of turkeys. Openings can be planted as annual food plots or left as natural vegetation, maintained by mowing, disking or burning. Management can best be directed by delineating them on an aerial photograph or map. Management activities can then be documented for each of the openings on an annual basis. Wildlife use can also be recorded to evaluate the productivity of these openings as part of the overall management program.



Openings can be managed through combinations of mowing, disking, and planting to provide year-round foods.

Supplemental Plantings

Supplemental plantings provide great benefits to an overall turkey management program. Plantings should be designed to provide a variety of foods for all seasons of the year, especially at times when natural foods are not readily available. An ideal food plot program would include plantings that provide greenery and grain in the fall and winter and greens, seeds, soft mast, and insects throughout the spring and summer. A listing of plantings commonly used for turkey management is presented in Table 1. The recommended seeds are normally available at feed and seed dealers at reasonable costs. To improve the overall quality of openings, shrub or tree plantings can be incorporated as part of the program. Species utilized by turkeys include autumn or Russian olive, blueberry, dogwood, wild plum, crabapple, wild cherry, persimmon, oak, hickory, and pecan.

Soil samples should be taken and analyzed from each opening to determine the need for lime and fertilizer for each particular crop. This practice will produce more abundant and nutritious foods for wildlife and will save time and money. Information on taking and analyzing soil samples can be obtained from the County Extension Service.

Spring "Warm Season" Plantings

Chufa is a sedge that produces tubers relished by wild turkeys. It is used primarily in the fall through spring and can serve as a supplement to acorns. However, chufas also are preferred by crows, hogs, raccoons, and deer. In areas with high populations of these species it is often difficult to grow chufas for wild turkeys. Repeated planting of chufas on the same

site can result in the depletion of soil nutrients. Every two to three years the chufa plantings should be rotated with a cover crop such as wheat, rye, clover, or vetch to replenish soil nutrients. Chufa plantings should be well distributed in patches one half acre or more in size. Sandy soils are best, since chufas planted in clay soils can be difficult for turkeys to scratch up. On large openings (one to five acres) one half acre can be planted in chufas and the rest in millet, vetch, or other type of planting. After two or three years crops should be switched to build up the soil. Where turkeys have never eaten chufas a portion of each patch may need to be pulled or disced to encourage use. Begin pulling or discing in November and continue until turkeys find them.

Other annual plantings that are quite valuable for turkeys include browntop and proso millet, corn, cowpeas, grain sorghum, and sunflowers. Browntop and proso millet make excellent plantings in openings designed to attract hens and their broods. A mixture of 15 pounds of browntop and five pounds of proso per acre will provide adequate seed and insects for turkeys as well as quail and doves. Corn, cowpeas, grain sorghum, and sunflowers provide feed during late summer, fall, and winter. Cowpeas and sunflowers should not be used in areas with high deer populations since they are susceptible to over browsing. Planting small grain patches in rows 24 inches apart allows turkeys to easily move through the patch. Feed can be made readily available throughout the fall and winter by periodically mowing strips through the patches.

Fall "Cool Season" Plantings

Clover and clover/grass mixtures are excellent supplemental turkey plantings in the piedmont, mountains, and on loam or clay soils in the upper coastal plain. Clover typically requires a soil pH of 6.5 to 7.5, therefore, it is quite difficult to grow in the highly acid and sandy soils of the lower coastal plain. Ladino, white, and crimson clovers are all readily utilized by turkeys. Clover can be successfully mixed with perennial grasses and annual winter grains to make excellent year-round food plots. The clover mixtures in Table 1 have been successfully used on WMAs in the central and northern parts of Georgia. When properly maintained and fertilized, these plots will come back in clover and grass for two or more years. It is important that clover seed be inoculated before planting. Inoculant can be purchased from your seed dealer or pre-inoculated seed may be purchased.



A mixture of wheat, rye, and clover makes an excellent fall-spring food plot.

Other "cool season" plantings often used by turkeys include wheat, oats, rye, ryegrass, and vetch. All of these plantings provide green vegetation for turkeys during the late fall, winter, and spring. An added bonus of these plantings is the production of grain or seed that can be utilized by turkeys during the spring and summer. These patches must be large enough to withstand grazing by deer. They can be followed with a "warm season" planting to provide food throughout the year for turkeys and other wildlife.

Perennial Grasses

Wild turkeys, especially hens and their broods, will heavily utilize openings planted in permanent grasses. In central and south Georgia, bahia grass is a good perennial summer food. Bahia grass openings should be maintained annually by mowing and fertilization in late February. Beginning in July, brood habitat can be enhanced by mowing alternating strips on a monthly basis until September, at which time entire openings can be mowed. After the last mowing in September, plots can be overseeded with wheat, oats, rye, or vetch. Plots should be limed and fertilized according to soil sample recommendations. Some areas of the state, particularly the piedmont, have openings established in fescue. Fescue has limited value for wildlife and would be much more productive for turkeys if converted to another grass (bahia or bermuda).

Natural Openings

Natural openings maintained by discing, mowing, or burning provide quality habitat for turkeys. Discing in winter encourages the growth of heavy-seeded annual plants. April discing promotes production of important seed producing grasses, while June discing favors plants that attract insects and produce seed. Openings should be disced every two to three years to maintain plant growth desirable for turkeys. Mowing on a three year cycle will encourage the growth of blackberry and greenbrier. Blackberries are a preferred soft mast used by both poults and adults. Prescribed burning on a three year cycle in February, also can be used to maintain openings.

Agricultural Openings

Agricultural fields when well dispersed throughout forested habitat, create edge and are heavily utilized by turkeys. Turkeys will glean food from fields planted in corn, sorghum, soybeans, millet, peanuts, and a variety of other agricultural crops. Planting winter grazing in a strip 15 to 30 feet wide around cultivated fields and orchards can benefit turkeys and other species of wildlife.

Improved Pastures

Some of the highest turkey populations in Georgia occur in areas where improved pastures are interspersed with woodlands. Pastures planted to summer grasses, like bahia and bermuda, provide the greatest benefits to wild turkeys. Moderate grazing stimulates the growth of grasses throughout the summer, which increases insect and seed production. In addition, these areas can be overseeded with rye, wheat, and/or clover to provide winter grazing. Nesting cover and soft mast can be provided by excluding cattle from portions of the pastures adjacent to the woodlands. This technique also can be applied in woodlands that are being grazed. These areas of cover should be maintained by mowing or burning on a three year cycle during January or February.



Some of the highest turkey populations in Georgia occur where improved pastures are interspersed with woodlands.

Pesticides

The use of agricultural pesticides in turkey range is potentially a serious limiting factor to a turkey population. The use of pyrethrins, whenever possible, to treat insect problems in agricultural crops should be preferred to other types of chemical treatments. It is advisable to avoid the use of products with long residual affects.

Regardless of the type pesticide treatment used, one should carefully follow label directions and guidelines for application of the chemical. Among the problems for turkeys are granular products, or treated seed, that are spilled at the ends of rows and not properly incorporated into the soil. Turkeys, quail, doves, and other birds feed on exposed, treated seed or pesticide granules. Liquid pesticides, whether applied by aerial or ground application, are also potentially lethal to turkeys. Problems occur because of skin contact with wet liquid products or by ingesting treated leaves or insects.

Poults are more susceptible to the direct and indirect effects of pesticides than are adult birds. As previously mentioned, insects comprise 80% or more of the diet of poults during the first two to three weeks of their lives. Insecticides are designed to reduce insect populations, therefore, any large scale reduction of an insect population may be detrimental to the turkey population.

Artificial Feeding

Artificial feeding concentrates turkeys, increasing the opportunity for poaching and the spread of disease. Substantial mortality due to disease has been documented where turkeys were concentrated at artificial feeding sites. In short, artificial feeding is not recommended for turkey management.

PEN-REARED BIRDS

Many landowners are interested in expanding or supplementing existing turkey populations with additional birds. The failure of pen-reared turkeys to establish stable populations is well documented. Pen-reared turkeys tend to be naive and exhibit a high degree of tameness which contributes to high mortality. The vast majority of pen-reared birds live relatively short lives in the wild and almost never become reproductively successful.

In fact, the release of pen-reared turkeys into a viable wild turkey population poses a potential threat of introducing disease and inferior genetic traits to the existing wild birds. Devastating outbreaks of both blackhead and fowl pox in wild flocks have been associated with stocking pen-reared birds.

Blackhead is an exceptionally serious disease that is easily transferred to wild birds from stockings of infected birds. Bobwhite quail and other upland game birds including grouse, pheasants, and jungle fowl may serve as reservoir hosts of blackhead and are capable of transmitting the disease to turkeys. Georgia law prohibits the release of wildlife for hunting or stocking purposes because of the danger of spreading disease. Ultimately habitat improvement and adequate protection are the only sure and safe ways to increase an existing population of wild turkeys.

HABITAT CHANGE

Georgia's turkey population is approaching the point where increases from expansion will be offset by population losses resulting from reduced quality or elimination of habitat. The state loses approximately 300,000 acres of wildlife habitat each year to development, certain intensive agriculture, and forestry. Since 1967, 2,000,000 acres of forest, pasture, and cropland have been lost to development alone. The greatest permanent habitat loss is due to urbanization, particularly housing.



Since 1967, 2 million acres of turkey habitat have been lost to development.

Extensive clear-cutting of timber stands and conversion of hardwood stands to pines for pulpwood production adversely impacts turkey habitat. Fortunately, these changes are not necessarily permanent. In fact, proper forest management can bring about improved habitat conditions for the wild turkey. Extensive clearing of woodland for agriculture is another major land use change that has adversely impacted turkey populations. This is restricted primarily to the southern portion of the state and, like changes in forest types, may not always be permanent.



Extensive conversion of hardwoods to short-rotation pine adversely impacts turkey habitat.

TURKEY HUNTING

Spring is a great time to be in the woods. The drab browns of winter are replaced by light greens of new growth, the pinks of redbuds, and whites of dogwoods. Songbirds sing, whip-poor-wills and chuck-wills-widows call, and best of all turkeys gobble. Spring is the mating season for the wild turkey and hunting season for turkey hunters.

Safety has to be foremost in every hunter's mind, but it is especially important in turkey hunting. In most accidents, the shooter claims to have mistaken a human for a turkey. There is no excuse for this type of accident. A gobbler in full breeding colors shows a red, white, and blue head and neck. Avoid wearing these colors! Be aware that when you sit down your pant legs often ride up and show your socks; do not wear red, white, or blue clothing that may cause you to be mistaken for a gobbler.

Turkey hunting has many unwritten rules involving sportsmanship and ethics. Today more turkey hunters are in the woods than ever before, and the desire to bag a bird some-

times overrides good judgement and courteous behavior. If someone is already calling to a turkey don't try to call it away from him, or worse yet, get in between the turkey and the other hunter. At best, neither of you will get the bird, and at worst there is real potential for a hunting accident. Remember you should be competing with the turkey, one on one, and not with another hunter. If you get to your favorite spot and someone else is already there, drive on; they beat you fair and square. Interference from other hunters is unacceptable, and the only way to avoid it is to practice simple sportsmanship.

Respect game laws regarding legal practices and limits. Limits are set to provide opportunity for hunters and to leave plenty of turkeys for next year. In addition to being illegal and unethical, shooting over your limit may deprive someone else of a hunting opportunity and may affect turkey populations in the future. Consider taking a youngster hunting and introduce a new generation to turkey hunting. Teach them your skills and help them to bag a big gobbler. You might find the experience more satisfying than killing a gobbler yourself.

The keys to being a successful turkey hunter are patience, persistence, and practice. Georgia has a sizeable, growing population of both turkeys and turkey hunters. We also have large tracts of both publicly and privately owned land available for hunting. Wild turkeys are wary, challenging, and often unpredictable. You just have to get in the woods, give it your best try, and learn from your mistakes.



Consider taking a youngster turkey hunting.

PHOTO COURTESY OF GLENN C. "TINK" SMITH, NATIONAL WILD TURKEY FEDERATION.

SUMMARY OF MANAGEMENT RECOMMENDATIONS

- DETERMINE YOUR MANAGEMENT OBJECTIVES
- INVENTORY HABITAT CONDITIONS AND DEVELOP A COVER TYPE MAP
- DEVELOP A COMPREHENSIVE MANAGEMENT PLAN BEFORE INITIATING MANAGEMENT
- USE LOW INTENSITY SITE PREPARATION ON TIMBER REGENERATION AREAS
- USE HERBICIDES ONLY ON A SELECTIVE BASIS
- USE WIDE SEEDLING SPACINGS, SUCH AS 8' x 10' OR 8' x 12', FOR ARTIFICIAL REGENERATION
- HARVEST TIMBER SO NEW STANDS ARE LONG, NARROW, IRREGULARLY SHAPED, AND 50 ACRES OR LESS IN SIZE
- HAVE NO MORE THAN 33% OF THE FORESTED AREA IN THE 0 to 20 YEAR TIMBER AGE CLASS
- USE MATURE TIMBER STANDS WITH OPEN UNDERSTORIES TO SEPARATE YOUNG TIMBER STANDS
- MAINTAIN TRAVEL CORRIDORS OF MATURE TIMBER AND STREAMSIDE ZONES AT LEAST 300' WIDE
- THIN PINE STANDS WHEN CROWNS OF TREES BEGIN TO OVERLAP
- THIN PINE STANDS SO THAT 20% to 30% OF THE GROUND IS IN DIRECT SUNLIGHT AT NOON
- PRESCRIBE BURN PINE STANDS ON A 3 YEAR CYCLE IN DECEMBER-FEBRUARY
- DO NOT BURN HARDWOOD STANDS
- MAINTAIN AT LEAST 20% OF THE AREA IN MATURE HARDWOODS
- MANAGE ON A 60 to 80 YEAR ROTATION FOR PINE AND 100+ YEAR ROTATION FOR HARDWOOD
- DO NOT GRAZE CATTLE IN WOODLANDS DURING THE FALL THROUGH THE SPRING
- MANAGE ROADS AND ROADSIDES AS FOOD PLOTS IN AREAS WITH CONTROLLED ACCESS
- USE TREE AND SHRUB PLANTINGS TO SCREEN THE VIEW OF FOOD PLOTS FROM PUBLIC ROADS
- ESTABLISH AT LEAST 5% TO 10% OF THE AREA IN OPENINGS
- MAKE OPENINGS 1 to 5 ACRES IN SIZE AND IRREGULAR IN SHAPE
- MANAGE OPENINGS THROUGH COMBINATIONS OF MOWING, DISCING, AND PLANTING TO PROVIDE FOOD AND COVER AT ALL SEASONS
- DO NOT ARTIFICIALLY FEED WILD TURKEYS
- DO NOT RELEASE PEN REARED TURKEYS OR QUAIL
- CONSULT YOUR LOCAL DNR, GAME AND FISH DIVISION WILDLIFE BIOLOGIST FOR MANAGEMENT ASSISTANCE

TABLE 1. SUGGESTED PLANTINGS FOR WILD TURKEYS

Crop	Planting Rate	Type of Seeding	Planting Date	Where Used#	Period Used	Treatment
Bahagrass	15 lbs/ac	Broadcast	April-May	L, U, P	Summer-Early Fall	Strip mow in Feb, July and Sept. Perennial.
Chufa	50 lbs/ac 30 lbs/ac	Broadcast In Rows	May-July	All	Fall-Winter	Rotate after 2-3 years. Annual.
Clover, Crimson	20 lbs/ac	Broadcast	Sept-Oct	M, P	Late Winter-Spring	Inoculate seed. Use reseeding variety. Winter annual. Mow in August to suppress weeds.
Clover, Ladino	10 lbs/ac	Broadcast	Sept-Oct	M, P	Late Winter	Inoculate seed. Winter annual. Mow in August to suppress weeds.
Clover, White	3 lbs/ac	Broadcast	Sept-Oct	M, P	Late Winter-Spring	Inoculate seed. May die in summer. Perennial.
Clover Mix 1 Ladino Clover Red Clover Perennial ryegrass Annual rye	7 lbs/ac 3 lbs/ac 20 lbs/ac 30 lbs/ac	Broadcast	Sept-Oct	M, P, U	Late Winter-Summer	Inoculate clover seed. Mow in strips in early June. Mow again in mid-August. Will come back in grass and clover for 2 or more years. Maintaining the proper pH by liming is critical.
Clover Mix 2 Orchard Grass Ladino Clover Red Clover	20 lbs/ac 7 lbs/ac 7 lbs/ac	Broadcast	Sept-Oct	M, P, U	Late Winter-Summer	Inoculate clover seed. Mow in June and August.
Clover Mix 3 Wheat Annual rye Crimson Clover	40 lbs/ac 30 lbs/ac 20 lbs/ac	Broadcast	Sept-Oct	P	Fall-Spring	Inoculate clover seed. Cover lightly by dragging. On clay soils light discing or mowing in early Sept. Can maintain clover for 2 or more years.
Corn	7 lbs/ac	Row	March-June	All	Fall-Winter	Side or top dress with 100 lbs/ac ammonium nitrate when plants reach 18 to 24 inches tall. Annual.
Cowpeas	30 lbs/ac	Broadcast	May-June	All	Late Summer-Fall	Annual.
Grain Sorghum	7 lbs/ac	Row	April-June	All	Fall-Winter	Treat like corn. Annual.
Millet, Browntop	20 lbs/ac	Broadcast or drill	April-June	All	Summer-Early Fall	Annual.
Millet, Proso	20 lbs/ac	Broadcast	April-June	All	Summer-Early Fall	Annual.
Oats	2 bu/ac	Broadcast or drill	Fall	All	Winter-Spring	Annual.
Sunflowers	5 lbs/ac	Rows	May-June	All	Fall	Annual.
Vetch	25 lbs/ac	Broadcast	Fall	All	Winter-Spring	Inoculate sacrificed seed. Winter annual. Mow in June then mow and disc lightly in fall. Should come back for 2 or more years.
Wheat	2 bu/ac	Broadcast or drill	Fall	All	Winter-Early Summer	Annual.

Check with your County Extension Office for soil requirements and best varieties to plant.
#M = Mountain, #P = Piedmont, #U = Upper Coastal Plain, #L = Lower Coastal Plain

SUGGESTED READINGS

- The American Wild Turkey, H.E. Davis. 1949. Small Arms Technical Publishing Company, Georgetown, S.C.
- The Wild Turkey: Its History and Domestication. A.W. Schorger. 1966. University of Oklahoma Press, Norman. 625 pp.
- The Wild Turkey and its Management. Edited by Oliver H. Hewitt. 1967. The Wildlife Society, Washington, D.C. 589 pp.
- The Book of the Wild Turkey. Lovett E. Williams, Jr. 1981. Winchester Press, Tulsa, Oklahoma. 181 pp.
- Managing Openings for Wild Turkeys and Other Wildlife. Ron Brennemen, James Earl Kennamer and Mary Kennamer. 1991. National Wild Turkey Federation, Edgefield, South Carolina. 39 pp.

GAME MANAGEMENT OFFICES

ATLANTA.....	404/656-3522
ARMUCHEE	404/295-6041
GAINESVILLE	404/535-5700
THOMSON	404/595-4211
FORT VALLEY	912/825-6354
ALBANY	912/430-4254
FITZGERALD	912/423-2988
BRUNSWICK.....	912/262-3173
SOCIAL CIRCLE	404/656-3522

ZELL MILLER, GOVERNOR
JOE D. TANNER, COMMISSIONER
DAVID J. WALLER, DIRECTOR

BOARD OF NATURAL RESOURCES

PATRICIA C. EDWARDS
CHAIRMAN
BARNESVILLE - THIRD DISTRICT

C. TOM GRIFFITH
VICE CHAIRMAN
WATKINSVILLE - TENTH DISTRICT

JOHN LANIGAN
SECRETARY
ATLANTA - MEMBER - AT - LARGE

REESE J. THOMPSON
VIDALIA - FIRST DISTRICT

J. LEONARD EUBANKS
PELHAM - SECOND DISTRICT

LINDA S. BILLINGSLEY
ATLANTA - FOURTH DISTRICT

E.R. MITCHELL, JR.
ATLANTA - FIFTH DISTRICT

FELKER W. WARD, JR.
ATLANTA - SIXTH DISTRICT

C.W. (SONNY) JACKSON
CARTERSVILLE - SEVENTH DISTRICT

CURTIS FARRAR
DOUGLAS - EIGHTH DISTRICT

DONALD J. CARTER
GAINESVILLE - NINTH DISTRICT

WILL D. (BILLY) HERRIN
SAVANNAH - COASTAL DISTRICT

JAMES (HERB) BUTLER
SMYRNA - MEMBER - AT - LARGE

GLENN E. TAYLOR
ATLANTA - MEMBER - AT - LARGE

JAMES GRIFFIN, JR.
ALBANY - MEMBER - AT - LARGE