

MISSOURI WHITE-TAILED DEER MANAGEMENT PLAN



MISSOURI DEPARTMENT OF CONSERVATION
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INTRODUCTION

The white-tailed deer (*Odocoileus virginianus*) is arguably the most important game species in North America. Additionally, the white-tailed deer is both socially and economically important to the citizens of Missouri. As Missouri's most popular game species with diverse citizen interest, the management of the white-tailed deer has a number of unique challenges that range from providing public viewing and hunting opportunities, to minimizing conflicts.

The white-tailed deer management plan was developed to outline the components of Missouri's deer management program and provide strategic direction for deer management in Missouri over the next 10 years. By clarifying the deer management goals and objectives of the Missouri Department of Conservation (MDC), this plan provides an opportunity for critical input from Missouri citizens on the direction of deer management in Missouri. This plan outlines many activities that are already occurring and proposes new concepts to be evaluated during implementation of the plan. It does not outline operational details of the deer management program. Operational details (e.g., proposed regulation changes, research proposals, and work plan adjustments) of plan implementation will be evaluated within a structured decision making framework, and implemented through the appropriate processes.

Previous planning efforts have not been as comprehensive and goal focused as this plan. For example, the most recent 2004 Strategic Deer Plan's primary focus was to manage rapidly growing populations, which at the time was a major challenge of managing Missouri's deer herd. The complexity of challenges to deer management in Missouri continues to increase over time. Existing and future challenges include, but are not limited to: managing deer in urban areas; public versus private land deer management; changing hunter attitudes, preferences, and demographics; changing land use practices; and disease threats such as chronic wasting disease. Ultimately, there is no optimal condition for deer management only a series of alternative strategies that have some predictable and some unpredictable outcomes. Therefore, identifying deer management goals and priorities is a critical first step in establishing the foundation for the future of deer management in Missouri.

This plan outlines four primary goals that incorporate the current priorities for deer management in Missouri: 1) Proactively manage for balanced deer populations below the biological and social carrying capacity within the defined management units at levels acceptable for agriculture, ecosystems, and other impacts using science-based wildlife management practices; 2) Provide opportunities for all citizens to enjoy deer-related recreational activities, and promote deer hunting as a socially and culturally important tradition that is the primary tool to achieving the deer population goal; 3) Ensure the maintenance of a healthy deer population, and minimize the threat and impacts of diseases on the deer populations in Missouri; 4) Provide information to the public about all aspects of deer biology and management in Missouri, and create opportunities for additional public engagement in the decision making process regarding the management of Missouri's deer resource.

MISSOURI DEER MANAGEMENT PROGRAM REVIEW

In preparation for the development of the white-tailed deer management plan a thorough review of existing information, identification of management challenges and assessment of the current status of white-tailed deer management in Missouri was conducted. A summary of that information can be found within the *White-tailed Deer Management Program Review*.

HISTORY OF WHITE-TAILED DEER IN MISSOURI

Pre-1930's – Decline of the Missouri Deer Herd

Pre-settlement, white-tailed deer (*Odocoileus virginianus*) were found throughout the state with the highest densities occurring in northern Missouri. Like many wildlife species in the latter half of the 19th century, deer

numbers declined with European settlement of Missouri. The decline occurred at a time when humans were impacting the Missouri landscape at a scale never before experienced. Throughout much of Missouri, forests were cut, most accessible land was grazed or farmed, and humans were scattered on small parcels across the rural landscape. The decline in deer numbers resulted partly from the dramatic human-induced environmental changes and overexploitation as a result of local consumption and market hunting.

Deer population declines became evident by the 1870's, and local statutes were instituted to try and stem the decline. The first statewide legislation aimed at protecting the deer population did not occur until 1874 when a 9-month closed season on deer was imposed. However, market hunting continued causing further population declines. With no provisions for enforcement of the laws, early legislation was largely ineffective. The first effective law was implemented in 1905 (Walmsley Law), which reduced the deer season to 2 months. Does and fawns were protected year round. The Walmsley Law also provided for the first paid game wardens, however, this law suffered setbacks and was repealed in 1907. Deer numbers continued to decline to a low of approximately 400 deer in 1925 when the deer season was completely closed. Wildlife refuges were acquired and for the first time, and deer from other states were brought in for restocking.

1930's-1980's – Restoration of the Missouri Deer Herd

The white-tailed deer has proven to be adaptable to human activities and in spite of human impacts on Missouri landscape, deer populations have recovered and even taken advantage of the changes. However, population recovery would not have occurred without a change in public attitudes toward wildlife. Early efforts to stem the decline in deer populations through regulation generally failed because of a lack of public support. In the early twentieth century, attitudes toward wildlife shifted from a utilitarian to a more conservation oriented emphasis. Citizens recognized their impacts on wildlife and began supporting efforts to protect and restore many wildlife species. As a result, the stage was set for recovery of many species when the Missouri Department of Conservation was formed and modern day wildlife conservation began.

The state legislature reopened the deer season in 1931 for bucks only which remained in effect until 1938 when the newly formed Conservation Commission closed the season. Although there had been some small increases in deer numbers since the low in 1925, the creation of the Department of Conservation and the Conservation Commission initiated the first significant and successful efforts to restore many wildlife species, including deer. In 1938, the first Conservation Commission put into place several programs aimed at protecting and restoring many of Missouri's game species, including deer. Enhanced wildlife law enforcement, an expanded refuge program, control of unwarranted fires and over-grazing, progressive timber and wildlife habitat management, public conservation education programs, and an aggressive deer trapping and relocation effort were all important steps in restoring the state's deer population. These efforts stimulated rapid growth of the deer population, and by 1944 there were an estimated 15,000 deer in Missouri. As a result, the Conservation Commission established the first modern day firearms hunting season in 1944. The first archery season was a 3-day hunt held in 1946, and only included one county with no deer harvested using archery equipment until 1950. The first statewide archery season was held in 1963.

Deer management at the time was relatively simple because the primary objective was to increase deer populations, which could be accomplished primarily by protecting does from harvest. In Missouri, early deer biologists realized the importance of population management and the role of doe harvest on population growth. In a proactive response to a rapidly increasing deer population, the harvest of antlerless deer was initiated in 1951. The early initiation of antlerless harvest proved beneficial as population goals evolved from rapid deer population growth to stabilization. Hunters in states with long histories of restrictive doe harvest were much more reluctant to harvest does resulting in many deer populations exceeding both their biological and social carrying capacities. Missouri's history of having hunters accustomed to shooting does made population

management much easier as deer numbers increased. As a result of a growing deer population, the firearms deer season and hunting regulations were continually evolving, particularly the liberalization of doe harvest.

1980's-Present – Stabilization of the Missouri Deer Herd

By the late 1980's deer populations across much of the state had been well established and were growing rapidly. This era of rapid population growth was met with increasing liberalization of regulations and expanding hunting opportunities. Prior to 1988, hunters were only allowed to harvest one deer during the firearms season, but in 1988, hunters were issued 1-2 additional antlerless deer on bonus permits in several management units throughout the state. Then starting in 2004 hunters were issued unlimited antlerless permits in many management units in the northern, central and western parts of the state. All of these changes were intended to address issues related to growing deer populations and have been effective at stabilizing deer populations in many parts of rural Missouri.

Traditionally deer management has focused on increasing deer numbers at a large geographic scale which was relatively simple to accomplish through limited harvest quotas. Now that populations have been established statewide, our focus has shifted to establishing and achieving localized population goals which are influenced by environmental and social factors. As a result of the complexity of these interrelated factors, the delicate balance of managing deer populations at biologically sound and socially acceptable levels is more difficult than past management efforts.

CURRENT STATUS OF WHITE-TAILED DEER IN MISSOURI

White-tailed deer populations are well established throughout Missouri with an estimated statewide population of greater than one million deer. Regional deer densities and herd demographics in Missouri have changed greatly over the last several decades. Changes in regulations have resulted in stable or reduced deer populations in many parts of north, west, and central Missouri. Additionally, implementation of the antler-point restriction and shifting hunter preferences for older bucks in the population has resulted in a shift in the composition of harvest, resulting in changing demographics of the deer herd in north, west, and central Missouri. Across much of south Missouri deer populations continue to slowly grow with changing hunter selectivity slowly shifting the sex and age structure of the population, but deer populations in southern Missouri are largely below biological and social carrying capacity.

DEPARTMENT DEER PROGRAM MISSION STATEMENT

The mission of the deer program is to use science-based wildlife management to maintain biologically and socially balanced deer populations throughout the state that provide recreational opportunities, and minimize human-deer conflicts and the potential for negative impacts on ecosystem health.

GOALS AND OBJECTIVES

The *Missouri White-tailed Deer Management Plan* has been developed to provide long-term strategic goals that direct management of the white-tailed deer in Missouri. This plan presents a series of goals, objectives, and strategies for managing Missouri's deer herd in the future. The goals of this plan should remain relatively constant over time; however, objectives and strategies may need to be altered periodically as conditions change and new challenges arise.

Goal 1: Deer Population Management – Proactively manage deer populations for a balanced sex and age structure while maintaining densities at or below the biological and social carrying capacity within the defined management units using science-based wildlife management practices.

The white-tailed deer is highly valued by the citizens of Missouri; however, conflicts between deer and humans as a result of agricultural damage, deer-vehicle collisions, landscaping damage, and suppression of forest regeneration do occur. MDC attempts to minimize the negative impacts of deer by keeping deer populations at acceptable levels and providing landowners and communities a diversity of lethal and non-lethal alternatives to mitigate damage risk.

It is important for a deer management plan to define management units and to propose measures to assess current status of the population. A plan should also propose population goals, management strategies to achieve the population goal, and a method to monitor population response. Ultimately, there can only be three desired deer population management objectives: increasing the deer population, maintaining the population, or reducing the population. Therefore, management unit population status can be simply stated as having too many deer, about the right number of deer, or too few deer.

The challenge in establishing population goals is balancing social and biological demands given that there are variable deer densities, habitat conditions, and stakeholder attitudes toward deer within and among management unit. Any method for establishing population goals should give consideration to all potentially affected interests within the management unit. In the end, public attitudes toward deer and perceptions of the population will determine the success or failure of the deer management program in Missouri.

Recreational hunting is the preferred method for managing deer populations and the associated deer-human conflicts. However, traditional hunting practices may not always be feasible or effective. Therefore, maintaining alternatives to traditional management for mitigation of damage is critical to ensuring that the public continues to place a high value on deer in Missouri.

Objective A – Establish deer population goals for each management unit (e.g., county or aggregate of counties in urban areas) with consideration to available habitat, recreational demand, and the potential for deer-related damage

Strategy 1 – Evaluate current methods for establishing population goals, and investigate potential new methods that incorporate habitat characteristics, hunter satisfaction and success, human-deer conflicts, and other factors (e.g., land use and human density)

Strategy 2 – Evaluate the current processes, and investigate alternative mechanisms for obtaining stakeholder input for establishing population goals and proposing changes to the demographics of the deer population

Objective B – Annually assess and monitor deer populations within each management unit using science-based techniques

Strategy 1 – Evaluate current and future data collection needs for population assessment and monitoring that use science-based methods (e.g., statistical population reconstruction) to accurately assess population trends within each management unit using harvest data, hunter surveys, and other methods as appropriate

Strategy 2 – Utilize surveys of randomly selected hunters and landowners in addition to other public input methods to determine socially acceptable population levels.

Strategy 3 – Develop and implement methods to monitor herd health and habitat parameters (including age distribution, reproductive rates, age-specific antler development, physical condition, and vegetation monitoring) to ensure deer populations are in balance with available habitat.

Strategy 4 – Increase citizen participation in data collection that generates indices of deer abundance, sex ratio, and recruitment (e.g., Bowhunter Observation Survey, partnerships with local government entities, and landowner cooperatives)

Objective C – Establish effective harvest guidelines for management of deer on both public and private lands within each deer management unit to meet population goals

Strategy 1 – Evaluate current season timing and structure to meet goals of managing for balanced herd structure

Strategy 2 – Periodically evaluate the regulatory framework to ensure that regulations are simple, easily understood, and provide the flexibility necessary to achieve population levels required to meet management goals on both public and private lands

Strategy 3 – Annually evaluate population status within each management unit and if needed adjust the availability of antlerless permits, modify the availability and length of the antlerless season, and adjust other regulatory options in order to maintain or achieve population goals.

Objective D – Develop or continue programs for localized deer management within a management unit (e.g., conservation areas, cooperatives, communities)

Strategy 1 – Develop deer population management and regulatory strategies for conservation areas that achieve deer population demographics (densities, sex-ratio, and age-structure) similar to those on private lands while providing a diversity of hunting opportunities with consistent easy to understand regulations.

Strategy 2 – Continue to work with other partners (e.g., Missouri Dept. of Natural Resources, US Fish and Wildlife Service, US Forest Service, and National Park Service) to implement appropriate population management strategies on public lands not owned or managed by MDC

Strategy 3 – Evaluate the impacts of antlerless permits on management of deer populations on conservation areas and other public areas currently open to statewide regulations (e.g., US National Forest) and, if needed, develop an alternative strategy to meet population goals

Strategy 4 – Evaluate the effectiveness of current regulations and investigate additional management strategies for communities dealing with localized deer management challenges

Strategy 5 – Evaluate current strategies and develop new methods for engaging local communities, landowners, and cooperatives in deer management

Objective E – Provide flexible and innovative management tools and/or opportunities for communities, hunters, and landowners to achieve localized deer management objectives while meeting overall population goals

Strategy 1 – Review current permitting structure for landowners and evaluate alternative strategies to provide site-specific deer management programs to ensure flexibility for localized management strategies (e.g., Deer Management Assistance Program, Authorization to Destroy Deer) that are consistent with population goals.

Strategy 2 – Develop guidelines and procedures for handling deer damage complaints and issuance of Authorization to Destroy Deer to ensure consistent implementation of damage management

Strategy 3 – Continue to provide technical assistance on various lethal and non-lethal approaches to management of deer-related damage

Objective F – Increase effectiveness and management of deer populations in urban and suburban communities.

Strategy 1 – Review current strategies and policies (e.g., urban zone designations, methods), and evaluate alternatives to minimize conflicts and meet population goals in areas where traditional population management is constrained or not feasible

Strategy 2 – Continue to engage elected officials, municipal agencies, and local residents in community deer management evaluation methods and promote inter-community dialog on deer management challenges

Strategy 3 – Continue outreach efforts to educate hunters, landowners, and communities on their role in deer management

Objective G – Determine ecosystem impacts of deer and manage deer populations within levels that ensure maintenance of biologically diverse ecosystems

Strategy 1 – Develop and implement methods to monitor levels of deer impacts and associated influence on ecosystem function

Strategy 2 – Develop ecosystem impact objectives for management units with sensitive habitats (e.g., natural areas)

Goal 2: Hunting and Recreation – Provide opportunities for all citizens to enjoy deer-related recreational activities, and promote deer hunting as a socially and culturally important tradition that is the primary tool to achieving deer population goals.

White-tailed deer hunting has become an important part of Missouri’s wildlife conservation heritage and modern day traditions. In 2013, more than 513,000 individuals possessed some form of a deer hunting permit. Additionally, Missouri deer hunters annually spend more than seven million dollars hunting and had total annual expenditures of more than \$800,000,000.

Deer hunting is the primary tool that MDC utilizes to manage deer populations. Therefore, proper application of this management tool is critical to meeting deer population goals. Additionally, there is a great deal of tradition

associated with Missouri's deer hunting seasons; however, a cultural shift in the expectation of the hunting experience is occurring, with an increasing desire among hunters to see, and have the opportunity to harvest more older age class bucks. However, many deer hunters still want the opportunity to harvest any legal deer. Additionally, to achieve the deer population goals and maintain high levels of public satisfaction with the deer management, the desires of all user groups must be understood.

Objective A – Establish deer hunting season structure and regulations that achieve the deer population goal and promote hunter participation, recruitment, and retention

Strategy 1 – Determine attributes that affect the quality of the deer hunting experience (e.g., hunter density/interference, deer population characteristics, access) to ensure hunter retention

Strategy 2 – Evaluate current season structure, timing, and methods to maximize hunting opportunities consistent with population goals

Strategy 3 – Maintain quality of recreational hunting experience by maintaining a simple regulatory framework that provides a diversity of hunting opportunities

Strategy 4 – Continue to promote family and youth deer hunting to ensure hunter recruitment and retention

Objective B – Continue to promote recreational hunting as the primary tool to manage deer population

Strategy 1- Continue to promote hunting as the most effective option for managing deer populations

Strategy 2 – Continue to promote participation in Share the Harvest to demonstrate a local use of the deer resource and help ensure adequate harvest of deer

Objective C – Create a simple regulatory system that ensures fair and equitable allocation of hunting opportunities (e.g., seasons, methods, and permits) on private lands

Strategy 1 – Evaluate current system of allocation of permits to hunters and landowners and adjust as appropriate

Strategy 2 – Evaluate participation in various portions of the firearms and archery seasons and, where appropriate, adjust to provide additional opportunities

Objective D – Provide satisfactory hunting opportunities on public lands

Strategy 1 – Review the current allocation of hunting opportunities and regulations structure on MDC conservation areas (e.g., regulations, managed hunts, permit application) and develop an adaptive management strategy to ensure that, where possible, population goals meet recreational desires

Strategy 2 – Work with existing partner agencies to explore new opportunities (e.g., US Forest Service, National Park Service, and Missouri Department of Natural Resources) to provide quality hunting opportunities on public lands not owned or managed by MDC

Strategy 3 – Address deer habitat needs (e.g., bedding area, fawning cover) on MDC conservation areas

Objective E – Facilitate better deer hunting opportunities on private land

Strategy 1 – Continue to provide sound technical assistance to landowners regarding habitat management for white-tailed deer

Strategy 2 – Continue to provide technical guidance to landowners and landowner cooperatives regarding deer management

Goal 3: Deer Health and Disease – Ensure the maintenance of a healthy deer population and minimize the threat and impacts of disease on the deer populations in Missouri.

The Missouri Department of Conservation is responsible for ensuring the health of the deer population through management and regulation. Like all wildlife species, the white-tailed deer is susceptible to a number of diseases and parasites. The periodic occurrence of hemorrhagic disease (epizootic hemorrhagic disease and blue tongue), and the recent introduction of chronic wasting disease (CWD) to Missouri have raised public concerns regarding the short- and long-term impacts of diseases on the health of Missouri's deer population.

Chronic wasting disease, once established within a deer population, poses a significant threat to the long-term health and size of the state's deer herd. The emergence of CWD in Missouri not only jeopardizes the health of Missouri's deer population, it is also a long-term threat to the state's hunting heritage. Management actions to minimize the impact of CWD within our deer herd and efforts to reduce the spread and risk of future introductions require immediate attention.

The management response must give consideration to the level of risk any disease poses to the health of the deer herd, other wildlife, livestock, and humans. Identification and monitoring of diseases of concern coupled with development of contingency plans to deal with current and emerging disease risk will be beneficial in addressing current and future disease management challenges.

Objective A – Conduct monitoring of deer herd health and implement surveillance programs for diseases that pose a significant risk to the deer population

Strategy 1 – Maintain the current surveillance and management program to assess distribution and limit the further spread of CWD in Missouri

Strategy 2 – Implement a plan for handling and disposing of diseased deer that reduces the risk of spreading disease to new areas

Strategy 3 – Evaluate the need for additional surveillance of other diseases and develop monitoring programs where appropriate

Strategy 4 – Evaluate current methods and, if necessary, develop new methods to monitor health and condition of the deer population

Objective B – Implement policies and regulations to minimize the risk of introducing diseases not currently established in Missouri, and reduce the prevalence of diseases already established

Strategy 1 – Develop contingency plans to manage diseases in free-ranging and captive cervids, where possible, to prevent or minimize population impacts (e.g., CWD Management Plan)

Strategy 2 – Regulate captive cervid in a manner that minimizes the risk for disease transmission with free-ranging deer and elk

Strategy 3 – Evaluate the allowance of supplemental feeding and other activities that increase the likelihood of disease transmission by unnaturally concentrating deer

Strategy 4 – Collaborate with adjoining states and other wildlife professionals around the country to stay informed about new and emerging wildlife disease issues and respond appropriately to emerging threats

Objective C – Minimize risks from diseases that impact multiple species, such as wildlife, humans and livestock.

Strategy 1 – Educate the public about zoonotic disease risks

Strategy 2 – Work with public health agencies to monitor diseases of human health concern

Strategy 3 – Promote management practices that minimize the risk of introduction and spread of infectious diseases

Goal 4: Education, Communication, and Public Engagement – Provide abundant and adequate information to the public about all aspects of deer management in Missouri, and create opportunities for additional public engagement in decisions about the management of Missouri deer resource.

The public is very interested and directly affected by all aspects of deer management. Additionally, any discussion of deer hunting or management is likely to elicit a strong response. Public opinions and philosophies often stem from traditions, long-held ideals, and biases that may be difficult to change. Because of the diversity of stakeholders affected by deer management, it is critical that effective communication and engagement be a priority to ensure the long-term success of the deer management program. It is widely recognized that engaging large diverse groups of stakeholders is extremely difficult, and development of educational materials that clearly communicate management strategies is no simple task. Therefore, MDC must implement a clear strategy to engage the public, key stakeholders, and partner organizations to proactively address management issues.

Objective A – Clearly and effectively communicate deer management strategies to all stakeholders

Strategy 1 – Ensure that deer management information provided to the public is science-based, socially acceptable, accurate and relevant

Strategy 2 – Develop and implement a deer communication strategy that relays appropriate deer management information to the public and key stakeholders

Objective B – Ensure stakeholder engagement in deer management decisions and clearly communicate outcomes.

Strategy 1 – Develop and implement a strategy to engage a diversity of stakeholders when considering deer management issues

Strategy 2 – Use the most appropriate science-based human dimensions approaches when quantifying public perceptions of deer management

Strategy 3 – When necessary, engage various stakeholders through surveys, public meetings/open houses, focus groups, and or other appropriate public input venues to ensure citizen interests are considered

Objective C – Continue to coordinate with partners to provide science-based deer management information and implement educational outreach programs

Strategy 1 – Continue to work with University of Missouri Extension Service to develop and distribute relevant science-based deer management publications

Strategy 2 – Engage and support partners in education and outreach efforts

Objective D – Continue to value and promote the role of the private landowner and landowner cooperatives in the management of Missouri’s deer herd

Strategy 1 – Continue to host regional private land management workshops on quality deer management, herd health, landowner cooperatives, land management and survey techniques

Strategy 2 – Provide guidance to landowners and landowner cooperatives regarding quality deer management