Strategic Plan for Deer Management in Florida 2008-2018

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FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
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EXECUTIVE SUMMARY

This plan describes the history of deer management in Florida, its current status, and outlines a 10-year strategic direction through a series of goals, objectives and strategies. This document is a collaborative effort between the Florida Fish and Wildlife Conservation Commission (FWC) and its stakeholders designed to provide a "big picture" view of deer management in Florida. Its purpose is to aid in navigating around the day-to-day challenges of deer management toward our collective goal of a robust deer population that meets the public's desires for recreation while protecting property and ensuring the long-term welfare of the species. The plan's goals are three-fold, (1) ensure the existence of robust deer populations that meet the public's desire for recreational opportunities and protection of private property while ensuring the long-term welfare of the species, (2) ensure a high degree of public satisfaction with deer management in Florida, and (3) Manage deer habitats consistent with ecosystem health, deer population goals, and customer satisfaction goals.

Florida's deer herds and habitats are unique among the rest of the United States. Habitat quality and reproductive potential of deer in Florida are significantly lower than adjacent states. The variation in breeding dates of white-tailed deer in Florida is also unmatched by any other state in the U.S. Florida's subtropical climate and highly weathered soils are likely responsible for these differences and provide unique challenges to deer management.

White-tailed deer management in Florida and throughout the U. S. is certainly an example of a "great American success story." From near extinction in the 1930s deer populations and deer harvests have soared to record highs in Florida. Almost 85% of Florida's 226,000 hunters hunt deer (U.S. Department of the Interior, et al. 2001) making them the most popular game animal in the state. White-tailed deer are also one of a few species of wildlife whose over-abundance can seriously degrade its own habitat as well as the habitat of other wildlife, and inflict serious damage on agricultural crops and ornamental plantings. It should be recognized and celebrated, therefore, that deer harvest management will likely continue to be a necessary and desirable practice in Florida for many years to come.

INTRODUCTION

In 2005 the Deer Management Working Group began to develop a plan to guide the Agency's management activities related to deer. The working group is comprised of biologists, managers, researchers, law enforcement officers, and administrators representing a broad cross section of the Florida Fish and Wildlife Conservation Commission (FWC). Advisory to the Working Group is the Deer Management Stakeholder Group made up of representatives from major hunting and conservation organizations, large private landowners, and several state and federal agencies. This plan describes the history of deer management in Florida, its current status, and outlines its future direction through a series of goals, objectives and strategies. The actions outlined herein are designed to ensure robust deer populations that will meet the public's desires for recreation while protecting property and ensuring the long-term welfare of the species.

BIOLOGY OF DEER IN FLORIDA

There are four subspecies of white-tailed deer in Florida: The Florida coastal white-tailed deer (*Odocoileus virginianus osceola*) in the panhandle, the Florida white-tailed deer (*O. v. seminolus*) in peninsular Florida, the Virginia white-tailed deer (*O. v. virginianus*) in the extreme northeast and the endangered Florida Key deer (*O. v. clavium*) in the Florida Keys. Variations in size and antler characteristics of deer in Florida are governed largely by factors of soil fertility, vegetation, climate, topography, geographic location, and genetics (Harlow and Jones 1965, Harlow 1972, Shea et al. 1992, Vanderhoof 1992, McCown et al. 1995). The effects of these factors are reflected in the physical differences in deer of the same sex and age from separate locations in Florida (Harlow and Jones 1965).

Morphology

Adult male white-tailed deer in Florida weigh on average 125 pounds and stand approximately 36 inches tall at the shoulder. Female deer are smaller, averaging about 95 pounds and 32 inches in height. Deer in Florida are considerably smaller than those in most other states. There is also substantial variation in body size among deer within Florida. The largest animals occur in the Panhandle and the smallest in southern Florida.

Antler characteristics of deer also differ, depending on age, nutrition and genetics. Nutrition plays an important role in antler development, particularly the amount of protein, calcium, phosphorus, and magnesium in the forage. Different habitats provide different amounts of nutrients; therefore, habitat type and quality can influence antler characteristics. Deer in central Florida sand pine-scrub oak and flatwoods communities had the smallest beam diameter and highest percentage of spikes in yearling bucks (Harlow and Jones 1965). In northwest Florida flatwoods, poor antler development of yearling bucks also appears to be related to the late fawning period (Shea et al. 1992).

Reproduction

There is considerable variation in breeding dates of white-tailed deer in Florida. Breeding dates range from July-August in southern Florida to February-March in the northwestern part of the state (Richter and Labisky, 1985). In central and northern Florida, peak breeding occurs during September-October and October-November, respectively. In general, white-tails from coastal flatwoods breed earlier than those from pine-oak uplands, regardless of geographic location (Harlow and Jones 1965). The wide range in breeding dates is partly due to the long growing season and mild winters which allow fawning to occur almost year round. In South Florida, an area of high rainfall, breeding is likely timed to synchronize birth with the driest period of the year (February/March).

The reproductive rate of deer is influenced by the nutritional quality of forage. Thus, deer occupying regions with an abundant high quality food supply generally have higher productivity rates. In Florida, productivity is less than reported for other eastern North American deer herds (Harlow and Jones 1965). While the average statewide reproductive rate is 1.28 fawns/pregnant doe (Richter and Labisky 1985), actual productivity (reproductive rate x pregnancy rate) can be as low as 0.80 fetuses/doe (Harlow and Jones 1965). Within the state, productivity varies depending on local habitat and nutritional conditions. Harlow and Jones (1965) reported a reproductive rate of 1.11 fetuses/pregnant doe in the pine oak uplands of Central Florida (Citrus County) and 1.90 in pine-oak uplands of the Florida Panhandle. In South Florida, reproductive rates ranged from 1.00 fetuses/pregnant doe in an area with thin, infertile soils to 1.50 fetuses/pregnant doe in an area with comparatively fertile and productive soils (McCown et al. 1991).

The relatively low productivity of some Florida deer herds has been largely attributed to low soil fertility. Protein and phosphorus levels in northern flatwoods are low during spring and summer (Kilgo and Labisky 1995) and are believed to affect adult females during gestation and lactation, resulting in reduced productivity and fawn survival. In addition, Florida's deer forage is low in cobalt (Kretschmer et al. 1954), which is believed to negatively affect reproductive performance (Harlow and Jones 1965, Smith et al. 1956).

HABITAT

Soils

There is a wide range of soils found in Florida leading to a rich diversity of natural plant communities and deer habitat. A total of 7 soil orders are represented in the State. Soil variability occurs within each order and therefore more than one natural plant community can be represented by each soil order. Entisols are characterized by deep excessively drained sandy soils perhaps best represented by sandhills and scrub found in the northern, central and panhandle regions of the State. Contrasting this are histosols that consist of poorly drained organic soils represented by swamps, bays and marshes. Alfisols and

ultisols are sandy to loamy soils over a layer of loam or clay subsoil, and are represented by upland hardwood forests, upland mixed forests and upland pine forests. Spodosols occur throughout Florida and are the predominate soils associated with pine flatwoods and dry prairies interspersed with cypress strands and domes. Mollisols and Incentisols are found only in small scattered areas in the state, and both are poorly drained and are common to swamp and marshy areas. Some mollisols are rich in calcium carbonates near the surface as in the pine rocklands and hammock rocklands of South Florida.

Soils found in Florida and their ability to produce deer forage is strongly influenced by water availability, pH and available nutrients. Depth of the water table can vary greatly in Florida from deep sandy ridges to areas of low topography that are inundated much of the year. Soil pH can range from extremely acidic (near pH 4) in the flatwoods to neutral to mildly alkaline where soils are associated with sources of calcium carbonate. Soil pH can be a major influence of plant composition and therefore deer forage. In addition, nitrogen fixation by legumes is reduced by acidic soils. Nitrogen levels as well as most mineral nutrients are often low in Florida soils. Even when nutrients are supplemented, high rates of leaching occurring in excessively drained sandy soils can reduce the beneficial effect to deer forage. Soils with limestone within the root zone tend to be more fertile.

There is a strong relationship between soil fertility and forage nutritional value. While soil fertility varies, Florida's soils are generally considered low in fertility, with corresponding poor nutritional deer forage, which can affect morphological and physiological characteristics such as body weights, antler size and reproduction. Soil fertility can be altered (i.e. fertilization) however, these practices are influenced by soil characteristics and can be limited in droughty deep sands that quickly leach nutrients. Nevertheless, there are scattered areas in the State that have relatively fertile soils with advantageous water carrying capabilities that would positively affect deer herd productivity and morphology.

Plant Communities

Florida's land mass contains 58,664 square miles represented by 81 natural communities (Florida Natural Areas Inventory and Florida Department of Natural Resources1990). Most of the terrestrial communities and many of the wetland communities provide important components of deer habitat and vary in quality relative to soil fertility and plant composition.

Plant communities in Florida and elsewhere establish themselves and progress toward maturity through a process termed ecological succession (Wikipedia 2007a). In the early stages of succession herbaceous plant species colonize bare ground. The herbaceous plants are eventually replaced by grasses and shrubs. Later, trees begin to colonize the site and in the final or climax stages mature forests with well defined under-stories dominate the landscape.

The most extensive natural community in Florida is the pine flatwoods, characterized by low flat topography, and relative poorly drained, infertile, acidic, sandy soils. The overstory is often slash pine or longleaf pine with gallberry, saw palmetto, and wiregrass understory. While forage within the pine flatwoods community is usually poor in nutrient quality, habitat treatments such as prescribed burning and mechanical palmetto reduction can increase forage quality and quantity. Since flatwoods can be found in fairly large expanses, flatwoods that are interspersed with other natural communities provide better deer habitat.

Florida scrub is another important natural community utilized by deer and found predominately in peninsular Florida. Scrub gets its name from the scrub oaks that dominate the landscape and often an overstory of sand pine is present. Herbaceous ground cover can be limited in all but the youngest stands. Historically, fires periodically regenerated this community, and many of the flora and fauna have developed fire adaptations. Because these fires are often catastrophic events, much of today's scrub is managed mechanically. When sand pine exists in marketable stocking rates, clear-cutting is often used (i.e. Ocala National Forest). For several years, after removal of the overstory, available deer forage is increased, and only decreases with the beginning of canopy closure after 7-10 years. This can be an important habitat for deer when actively managed.

Like scrub, sandhills are found in deep sands of the entisol soil order, and may be interspersed with scrub. Unlike scrub the understory is usually open with a low basal area of longleaf pine, scattered turkey or bluejack oak midstory with wiregrass the primary herbaceous component. Forage quality is low, but is enhanced by frequent periodic fire. Similar to sandhills are the upland pine forests of the panhandle. While they are similar in structure with open midstories and low to moderately dense stands of longleaf, loblolly or shortleaf pine, the soils of this community are from the ultisol order. These soils are more fertile, and with their clay sub-layers, water availability is higher than sandhills. Upland hardwood, upland mixed and upland pine forests, when actively managed, may arguably represent some of the better deer habitat in the state.

Another important deer habitat in South Florida is the freshwater marshes of the Everglades characterized by the Florida Natural Areas Inventory as swale, wet prairie and marl prairie. Natural and man-altered events that change the hydrology of these systems can severely alter their ability to sustain deer populations.

Many of Florida's plant communities are fire subclimax communities (i.e. mesic flatwoods, sandhill and upland pine forests) and their value as deer habitat is enhanced through prescribed burning. Similarly, human activities like timber harvests and mechanical soil treatments can increase forage availability and mast production. Deer habitat should provide adequate food, water and cover. Early successional habitats are preferred by deer because they provide forage and adequate escape cover. Habitat quality is enhanced by the interspersion of different plant communities which maximizes edge effect. Loss of habitat has been and will continue to affect the distribution of deer in Florida with acreage from xeric communities most likely to be lost to development.

DEER MANAGEMENT IN FLORIDA

A Look Back

Early reports from the late 1600's reveal that white-tailed deer were quite numerous in Florida, however, by the mid 1700's a sizable trade in deer hides was well under way. Localized declines in deer numbers were probably evident by the early 1800's which may have prompted enactment of an 1828 territorial law prohibiting fire hunting west of the Suwannee River (Burr 1951). The development of Florida's rail system in the late 1800's and early 1900's opened up much of Florida to commerce and settlement. Commercial and subsistence exploitation of deer no doubt increased dramatically during this period.

Florida's deer herd reached its lowest point near the end of the 1930's, a fate shared by many other states. The concept of wildlife conservation was still in its infancy. Establishment of wildlife sanctuaries or refuges was a popular method of addressing the problem of rapidly vanishing wildlife. Game laws varied by county and were often difficult to enforce. In fact, enforcement of game laws outside the confines of established refuges was almost nonexistent. For example, The State Board of Conservation reported apprehending a total of five individuals in 1934 for killing doe deer. The advent of widespread automobile use brought with it the construction of roads providing unparalleled access to wildlife habitats. Timbering also provided truck trails and fire lanes deep into the forest where subsistence hunting by logging camps was not uncommon. To make matters worse a campaign to eradicate the cattle-fever tick (*Boophilus microplus*) saw the destruction of at least 10,000 deer in southern Florida from 1939-1941.

The 1940's saw the beginnings of Florida's deer herd recovery. In 1941 the Florida Legislature passed the necessary assent legislation to participate in the Federal-Aid-to-Wildlife program created by the Pittman-Robertson (P-R) Act of 1937. Not only did participation in this program guarantee sizable sums of federal money each year for wildlife management, but it also ensured that hunting and fishing license fees could not be diverted from the Commission of Game and Fresh Water Fish. One of the first projects to be undertaken by the Commission with P-R funds was the restoration of white-tailed deer herds depleted by The Livestock Sanitary Board during its campaign to eradicate the cattle-fever tick. Also in 1941 the Florida Legislature proposed a constitutional amendment establishing a Game and Fresh Water Fish Commission with five members appointed to serve 5-year terms.

The birth of the Florida Game and Fresh Water Fish Commission also marked the birth of the Wildlife Management Area (WMA) system. The newly formed commission recognized that wildlife populations could only be restored and maintained on wildlife habitat.

By 1951 deer numbers were believed to be between 45,000 and 50,000. The screw-worm, responsible for limiting growth of deer herds in south Florida was eradicated in 1958.

During the decade of the 1960's Florida's deer herds experienced strong annual increases. Arrests for game violations increased 5-fold from the early 1940's. Deer numbers were steadily increasing and annual deer harvest was over 40,000 animals.

Sound wildlife and habitat management practices coupled with effective law enforcement caused deer numbers to continue growing throughout the decades of the 1970's and 80's. The year 1985 marked the first time in Florida's recorded history that white-tailed deer harvest exceeded 100,000 animals. So successful was the return of the white-tailed deer that in some areas of the state female deer were legally harvested on an annual basis. Today deer harvest typically exceeds 100,000 animals annually.

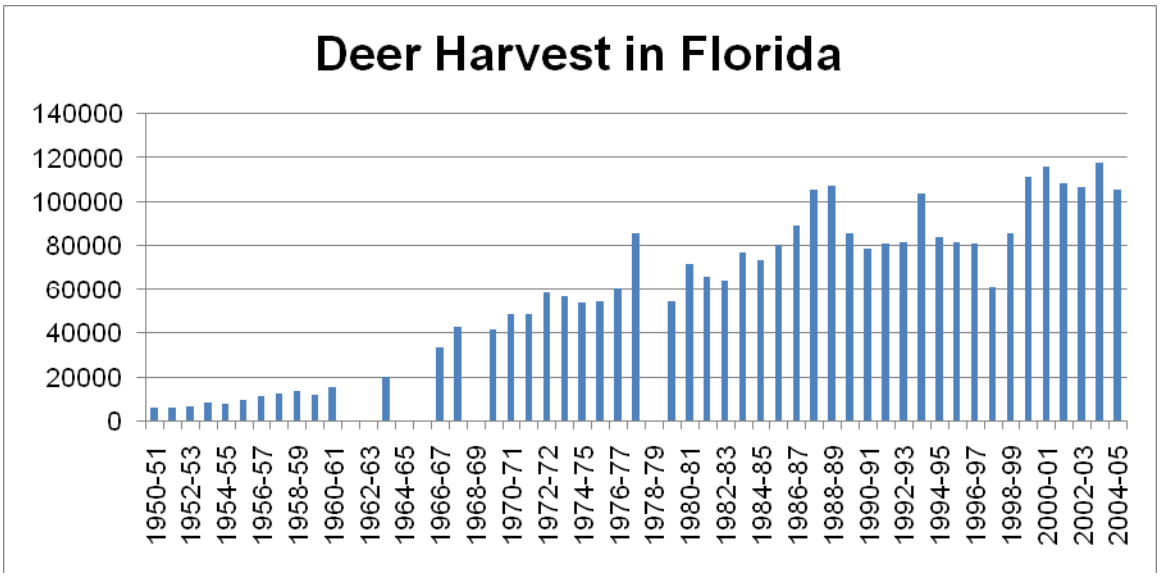

Figure 1. Historic deer harvest in Florida

Harvest Traditions

Deer hunting in Florida is as old as recorded history. To the early settlers, deer hunting was a way of life and the sale of deer hides provided substantial portions of their income (Wing 1965). By the early to mid 1900's, deer hunting had largely evolved from a means of subsistence to one of recreation.

The number of deer hunters in Florida increased steadily from the 1930s through the 1970s and stabilized during 1980s. Beginning in the latter half of the 80's deer hunter numbers began to decline. In 2001 Florida had 188,000 deer hunters compared to 191,000 hunters in 1991 (U.S. Department of the Interior, et al. 2001). This decline in hunter participation has been a trend across the entire U.S. for more than a decade (U.S. Fish and Wildlife Service 2007)

Hunting Deer with Dogs

The dog has been an important asset to man since it was first domesticated over 100,000 years ago (Wikipedia 2007b). Pursuing prey with dogs dates back to Medieval Europe and the practice no doubt followed the European settlers to the New World. In the 1800s, Floridians used dogs to work and protect livestock, aid in trapping and hunting, and as loyal companions. The sport of hunting deer with dogs had its origins in subsistence hunting. As the deer population grew, so did the popularity of hunting for recreation. Most dog hunters at that time hunted strictly in groups and often used several dogs. Some groups of dog hunters would take stands along narrow roads, rights-of-way or along known travel corridors around a block of forest while one member of the group would lead the dogs into the block in search of good deer sign. Eventually, the dogs would jump a deer and the chase would begin. By the 1960s hunters would hunt larger blocks of forest using motor vehicles while coordinating their movements with recently developed Citizen Band (CB) radios.

As Florida's population, and transportation system grew so too did conflicts between motorists and hunters. In 1983, hunting on or from the rights-of-way of federal, state, or county roads was prohibited by Florida Administrative Code to help minimize conflicts between deer hunters and motorists. In 2005 increased conflicts involving dog trespass led to the requirement of a no-cost registration for any person using dogs to take deer on private property.

Still Hunting

Still hunting is characterized by stalking or concealing oneself and waiting for quarry. Early settlers would stalk deer or other game for subsistence. Hunters would also sit on the ground next to a tree or hide in bushes in hopes of harvesting a passing deer. Some hunters would climb trees and sit on a limb to increase their odds of harvesting a deer.

As Florida's population grew so too did its road system which broke up large expanses of swamp land and areas of dense undergrowth making them more accessible by foot. Increased agricultural activity also attracted deer and the practice of planting food plots became common. In 1980 the practice of hunting deer at feeding stations was legalized enhancing opportunities for still hunters to locate and harvest deer. A 1992 survey of deer hunters conducted by the FWC showed that still hunters make up 82% of deer hunters in Florida.

Vehicle Hunting

Early settlers ventured into the vast swamps and marshes of south Florida by foot or small hand-made boats. Airboats and swamp buggies began to appear around the 1920s and later, track vehicles made their debut. These modern inventions allowed hunters to more freely access areas that were once extremely difficult to reach.

The popularity of these vehicles increased over the years and by the 1940s and 50s, organized swamp buggy races were being held in Naples. In the marshes and swamps of

the Everglades, these vehicles were hunted from and used to transport hunters to tree islands that deer often inhabited

The presence of swamp buggies and tracked vehicles has steadily declined since their numbers peaked around the 1970's and 80's, but the popularity of airboats continues to increase. Habitat loss and higher water levels resulting from changing land use practices have caused deer populations to decline in the Everglades area since the 80's. The decline in deer populations has contributed to the decline in use of swamp buggies and track vehicles for hunting purposes. Swamp buggies are still used primarily on private lands in South Florida to hunt deer, but remain popular in the Big Cypress WMA.

Quality Deer Hunting

"Quality" is a term currently in popular use by both deer hunters and deer managers alike. "Quality deer hunting", "quality deer management", "quality bucks", etc. fill the pages of most hunting magazines and hunting web sites these days. Like many popular terms it can mean different things to different people. Stripping away the value judgments commonly associated with the term leaves us with two basic tenets central to the idea of what quality deer hunting has come to mean. The first is voluntary restraint on the part of the hunter to delay the harvesting of young bucks until they reach maturity. The second is to participate in the active management of the herd by harvesting does when necessary to prevent deer overpopulation and promote herd health.

Delaying harvest of bucks until they reach maturity carries with it several risks and rewards. Bucks increase both body weight and antler size each year until they reach about 6 to 8 years of age, which means that older bucks will typically have larger antlers and body weights. Delaying harvest of younger bucks means there will be more bucks in the field in subsequent years. Seeing bucks while hunting is a key component of hunter satisfaction (Dhuey 2004). The risk is that for every year a buck is left in the field it is subject to natural mortality factors like predation, accidents, disease, parasites, acute periods of malnutrition, etc.

The Quality Deer Management Association has grown from a handful of members in 1988 to over 50,000 today. Many leases and hunting clubs currently practice some form of quality deer management and many hunters have asked for antler restrictions on some of Florida's Wildlife Management Areas.

Public Lands

As far back as the 1940s, the Commission recognized the need for public hunting lands amidst the population and industrial growth the State was experiencing. In 1941, the Cecil M. Webb (62,500 acres) area and in 1947 the J. W. Corbett (52,000 acres) were purchased with federal aid funds. In 1948, the Commission leased the first tract which was the 100,000 acre Gulf Hammock Wildlife Management Area (WMA). Later, the Commission

began entering into agreements with United States Forest Service and Department of Defense to include national forests and military installations in the WMA system.

Florida is among the nation's leaders in the amount of public land managed for wildlife. Over 5.6 million acres are open to public hunting with the vast majority of the acreage being open to deer hunting. Nineteen different partners/cooperators have their lands in the WMA system.

Private Lands

Deer hunting has always been an economically important practice to Florida landowners. In the early years hunting deer for subsistence provided the economic incentive to call for conservation of the species. In 1927 rapidly vanishing deer herds prompted enactment of Florida's first buck-only harvest restriction. As hunting evolved from a subsistence activity to a sporting activity, income from hunting leases provided an incentive for larger landowners to manage deer herds on a sustained basis. As deer populations increased the prohibition on doe harvesting was lifted, and in 1979 the first antlerless deer permits were issued for private lands.

Depredation and Damage Control

As Florida's deer herds recovered during the 1950's and 60's landowners began experiencing crop and ornamental depredation at an increasing rate. To provide landowners with the tools and flexibility necessary to control deer numbers locally, the Commission implemented a deer depredation program during the late 1970's. In 2006 the Commission issued just over 325 permits on 154,178 acres.

Disease Surveillance

The southeastern United States is noted for having the most varied and heavy parasite concentrations in North America. In Florida, whitetails are known to have 120 different parasites, infections, and disease conditions, not including various types of trauma (Forrester 1992). Some of the most significant diseases of deer in Florida include haemonchosis, lungworm pneumonia, and hemorrhagic disease (Forrester 1992).

Two ectoparasites that historically had a significant effect on deer populations in Florida are the screw-worm fly (*Cochliomyia hominivorax)* larvae and cattle-fever tick (*Boophilus microplus)*. Until its eradication, screw-worm fly larvae were the most important arthropod parasite of white-tailed deer in the southeastern United States, including Florida (Forrester 1992, Harlow and Jones 1965). It was first reported in the southeast in 1933 and caused considerable losses in both domestic and wild animals. In 1956, a program to eliminate screwworms was initiated with the release of male flies that had been sterilized by radiation exposure. Female screwworm flies mate only once in their lifetime, therefore this method resulted in the extreme reduction of screwworm populations (Diamant 1963). In two years, screwworms were eradicated and deer populations in south Florida increased rapidly (Harlow and Jones 1965).

Cattle fever tick was another ectoparasite that caused severe losses in deer populations, albeit indirectly. Cattle fever ticks (*Boobhilus spp.*) are vectors of highly pathogenic protozoan *Babesia bigemina* that causes Texas cattle fever or piroplasmosis. Texas cattle fever caused tremendous losses in the cattle industry and by the early part of the century efforts began to eradicate the ticks by the chemical dipping of cattle. Although the dipping program was successful in many areas, deer were found to be secondary hosts of the ticks and were thought to be reservoirs of the disease. In 1931, white-tailed deer in Orange County were found to be infested and subsequent legislation approved deer eradication throughout south Florida. An estimated 10,000 to 20,000 deer were slaughtered between 1939 and 1941, despite the lack of conclusive evidence that the fever tick could perpetuate itself on deer. It was later demonstrated that deer serve as hosts for *Boophilus* ticks, but only for short periods of time. Furthermore, attempts to transmit Texas cattle fever to deer via *Boophilus spp.* have been unsuccessful (Kuttler et al. 1972).

Chronic wasting disease (CWD) is a contagious neurological disease that belongs to a family of diseases called transmissible spongiform encephalopathies (TSEs). CWD is believed to be caused by a prion, an abnormal form of cellular protein that "infects" the animal by promoting conversion of normal cellular protein to the abnormal form. It can be transmitted directly or indirectly through environmental contaminant. Clinical signs in white-tailed deer are similar to other cervids, including weight loss, abnormal behavior, excessive salivation, neurological signs, and eventually death (Williams 2005). As of July 2006, CWD has been documented in 14 states and 2 provinces. It has not yet been documented in southeastern United States.

The Commission began a comprehensive CWD surveillance program in 2002. The surveillance occurs at two levels: passive and active. Passive surveillance involves observation and culling of free-ranging or captive deer that are sick, weak or demonstrate abnormal behavior (i.e. suspect or target animals) and deer that died of unknown causes.

Active surveillance includes random sampling of hunter harvested deer and road-killed deer throughout Florida. Currently, approximately 500-600 samples are collected annually from WMAs and private lands.

Heartwater is another potentially devastating disease of ruminants not known to occur in Florida, yet it is the target of an active monitoring program. Heartwater is a fatal tick-transmitted disease of wild and domestic ruminants. It occurs in sub-Saharan Africa and in the Caribbean region.

The threat of heartwater becoming established in Florida is very real because of the importation of reptiles which can act as hosts for transportation of exotic ticks. At least 3 tick species that are proven vectors of heartwater have been documented in Florida (Burridge et al. 2000). FWC is cooperating with the Southeastern Cooperative Wildlife Disease Study in exotic tick surveillance by collecting ticks from hunter harvested deer and from other wildlife throughout Florida.

THE ROAD AHEAD

Unique Habitats, Unique Approach

Deer management in Florida is quite different from most other states. Overpopulation is the most pressing challenge facing management of this species throughout most of the whitetail's range in North America (McShea et al. 1997). Florida, however, does not share this problem. Except for a few of the northern tier counties in the panhandle, deer populations in Florida are comparatively low. This is evidenced by the fact that despite having liberal deer harvest seasons and bag limits, Florida's annual harvest is considerably less than its neighbors (Fig 2). Florida ranks 15th among the 16 southeastern states in deer harvested per square mile of habitat (Southeast Deer Study Group 2006).

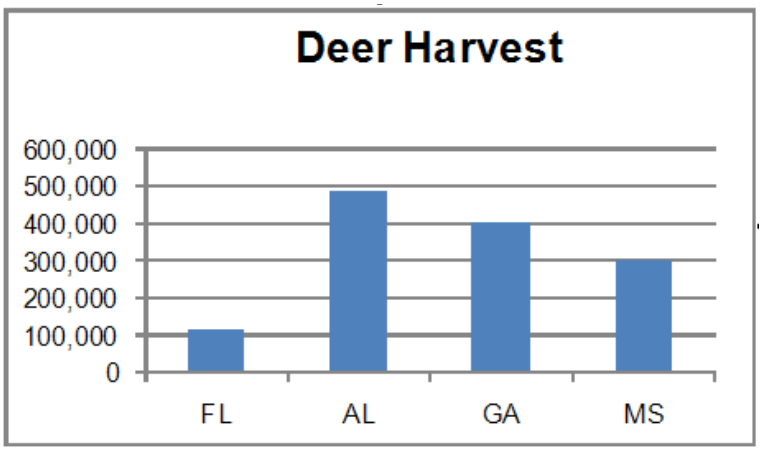

Figure 2. Mean deer harvest from select southeastern states (5-year average).

Deer habitat quality is highly correlated with soil fertility. In the more fertile soils of Alabama and Georgia, the densely populated herds exhibit an inverse relationship between deer density and the physical condition of animals within a herd. In these states, as deer population density increases further, overall herd condition and reproductive rates decline. Conversely, as deer population density decreases, health improves and reproductive rates rise. It is this relationship that forms the foundation for many of the practices of the popular "quality deer management."

Florida, with its comparatively infertile soils, extreme temperature and water regimes, and comparative low deer densities cannot take the same approach to deer management as Georgia or Alabama and expect to be successful. The management practice of balancing sex ratios through aggressive doe harvest (designed to control high density deer herds and increase the size of individual deer) may not be appropriate for much of Florida. In areas where both deer densities and rates of increase are low, aggressive doe harvest will not increase deer size, reproductive rate, or quality (Shea et al. 1992). To the contrary, this approach will only decrease population density and depress annual sustainable harvest (Wikipedia 2007c).

Deer are very resilient creatures, and despite the nutritional constraints of Florida's habitats the demand for sustainable high-quality deer recreational opportunities can still be met. Whether a hunter prefers to harvest only mature bucks, or chooses to harvest any deer that comes within range is a value judgment that will differ among individual hunters.

The challenge will be to provide a broad array of opportunities for deer hunters, while balancing the interests of farmers, landowners, and other outdoor recreationists as we chart the future course of deer management in Florida. Therefore, engaging stakeholders to work with the Commission in the implementation of this strategic plan will be a priority and critical to the future success of deer hunting and deer management in Florida.

Changing Land Ownership Patterns

Land ownership in Florida is changing. As population density increases land ownership size is decreasing (University of Florida 1998). This inverse relationship poses new challenges to deer management on private land. Currently 53% of Florida forest land is owned by non-industrial private landowners, and greater than 90% of all forest landowners in Florida own less than 50 acres (Carter and Jokela 2002). These smaller landowners often lack the incentives to manage deer populations on a sustained basis that larger landowners have, like economic return from lease fees, and greater ability to control herd composition. Often smaller landowners are in competition with their neighbors for their share of the annual harvest. Intense competition for a limited resource held in common has been shown to drive that resource to scarcity or even extinction (Aristotle 350 BC, Hardin 1968). As land ownership fragments, the challenge for Florida will be to develop a regulatory framework that provides incentives for smaller landowners to manage deer on their lands without compromising the sound stewardship practices many large landowners currently employ.

The Future of Deer Management in Florida

White-tailed deer are recognized as an integral part of the majority of Florida's 13 diverse ecosystems. They are considered the most popular game species in Florida. Almost 85% of Florida's 226,000 hunters hunt deer (U.S. Department of the Interior, et al. 2001). Moreover, for every deer hunter it is believed there are three non-hunting users of the resource (Langenau 1979). White-tailed deer are also one of a few species of wildlife whose over-abundance can seriously degrade its own habitat as well as the habitat of other wildlife species, and inflict serious damage on agricultural crops and ornamental plantings. Their over-abundance can also facilitate the outbreak of diseases and parasites that can threaten the health of both livestock and humans. It should be recognized, therefore, that deer harvest management will likely continue to be a necessary and desirable practice in Florida. The challenge we face will be to meet the future needs of deer-related recreationists while protecting and preserving our native ecosystems and the agricultural, silvicultural, hydrological, and wildlife resources they sustain.

GOALS OBJECTIVES AND STRATEGIES

Population Goal

Ensure the existence of robust deer populations that meet the public's desires for recreational opportunities and protection of property while ensuring the long-term welfare of the species.

Objective 1

Manage deer populations on a local level to increase the resolution of our ability to meet the needs and desires of the public.

Rationale: *Land use patterns, deer populations, harvest traditions, and attitudes toward deer management vary considerably across the state. To satisfy these varying needs we will need to manage deer populations on a more local level and to set population objectives that are compatible with local land uses and harvest traditions.*

Strategy-- Develop a Deer Management Unit (DMU) Approach to Managing Deer Harvest

Rationale: *Deer population productivity and reproductive timing vary considerably across the state. Setting population and harvest goals with greater regional resolution will allow target population levels and management strategies to most effectively reflect the needs and desires of local communities.*

Strategy-- Establish target deer population levels for each DMU in consultation with local publics (e.g., landowners, farmers, horticulturalists, deer hunters, other recreationists, etc.) that have an interest in deer management

Strategy-- Develop a deer population model to estimate abundance, monitor trends and calculate antlerless harvest scenarios for each DMU

Strategy-- Review the Agency's deer-related data collection and monitoring activities and take action to ensure the appropriate data are being collected and that the collection and analysis methodologies are integrated and are state-of-the-art

Strategy-- Conduct research necessary to ensure that the deer population model is science based and data-driven

Objective 2

Develop an ongoing capability to efficiently and accurately quantify public desires regarding target deer population levels

Rationale: *White-tailed deer populations are highly adaptable and can be managed to yield a broad array of recreational opportunities. The desires of the public and stakeholders are the most important considerations for prescribing deer management actions. Therefore, it is highly important to seek out and understand the preferences and attitudes of Florida citizens, and gather their input using the most efficient and effective methods available.*

> **Strategy--** Quantitatively define and measure Cultural Carrying Capacity using factors like depredation tolerance, hunter satisfaction surveys, harvest and population data, and records of deer-vehicle collisions for each DMU

Objective 3

Establish quantifiable deer population objectives for lands within the Wildlife Management Area System

Rationale: *Wildlife Management Areas in Florida provide many recreational opportunities for Florida's citizens. These areas are managed for the benefit of wildlife and the public good and will need to serve varied and often competing constituencies. Harvest pressure on these areas can be high and management may need to produce deer at the maximum rate possible to satisfy demand, while not adversely affecting other ecosystem outputs. Harvest strategies may not be identical to those for private land in the surrounding DMU due to differences in harvest pressure, and land use.*

> **Strategy--** Identify and establish appropriate method(s) of monitoring deer populations and harvest to achieve population objectives on Florida's WMAs

> **Strategy--** Using established population objectives, develop a standardized science-based, data-driven method for determining antlerless harvest on WMAs

> **Strategy--** Investigate the relationship between access control and deer mortality

Objective 4

Develop and implement a method for reliably determining how many (and where) deer are harvested annually.

Rationale: *Currently deer harvest is measured by a questionnaire sent out to 10% of license holders. This poses problems in sampling because many Floridians are not required to purchase a license. Response rates for the most recent survey suggest the potential for substantial non-response bias. Moreover, the results do not provide sufficient resolution to reliably estimate harvest on a county or even regional scale. Accurate harvest and hunter effort information are often used as indicators of abundance and are crucial inputs into successful population models.*

Strategy— Explore the feasibility of a mandatory tag and check system to determine how many and where deer are harvested in Florida each year

Rationale: *Accurate harvest information is the cornerstone of good deer management. Without a reliable estimate of the harvest it is difficult to affect changes in target deer populations. On high-demand areas a tagging system enables enforcement of bag restrictions to ensure equitable distribution of the resource among as many hunters as possible.*

Strategy— Evaluate the feasibility of developing a more comprehensive harvest survey methodology

Objective 5

Ensure early detection and prompt response to diseases that threaten Florida's deer populations.

Strategy-- Continue monitoring for Chronic Wasting Disease (CWD) and other important diseases with passive (necropsy of clinical suspects) and active (random sampling of hunter-harvested deer and road-killed) surveillance

Strategy-- Discourage supplemental feeding methodologies and other activities that would concentrate deer closely enough to dramatically increase nose-to-nose contact

Strategy-- Continue collaborating with Southeastern Cooperative Wildlife Disease Study's exotic tick surveillance, Epizootic Hemorrhagic Disease (EHD) and Blue Tongue (BT) monitoring efforts.

Strategy-- Work with other agencies and organizations as appropriate to educate Floridian's on deer management as it relates to human and animal health

Strategy-- Encourage private landowners, deer farmers, and hunt-clubs to participate in CWD-surveillance programs through the dissemination of educational and informational materials

Strategy-- Review, and revise if necessary, the CWD Contingency Protocol to reflect knowledge gained by states and provinces experiencing recent outbreaks of CWD

Strategy—Review and revise as necessary state regulations regarding importation of cervid carcasses and carcass parts as more knowledge regarding CWD transmission is obtained.

Customer Satisfaction Goal

Ensure a high degree of public satisfaction with deer management in Florida.

Objective 1

Maximize access to deer hunting opportunities and advocate for expanding those opportunities to the greatest extent feasible

Strategy – Continue to evaluate existing deer hunting opportunities on public lands and seek to improve and expand access and opportunities while maintaining sustainable deer harvests, acceptable hunter satisfaction levels, compatibility with other land management priorities, and compatibility with purposes for acquisition

Strategy—Continue to work with federal, state and local government agencies to gain access to public owned or leased properties to create new deer hunting opportunities for the public

Strategy – Develop and deliver incentives that will enable and encourage private landowners to provide affordable deer hunting on private lands

Objective 2

Solicit and utilize human dimension data to develop and continually improve customer satisfaction goals, objectives and strategies, and deer management recommendations and actions

Rationale: *For satisfaction initiatives to be successful, it is important to not only ask customers what they want, but to open up a two-way dialogue so staff can better understand customer preferences. Customer satisfaction efforts should then be developed with consideration of this input from customers. This dialogue should be ongoing to stay abreast of changing preferences and to seek continual alignment with customer's expectations.*

Strategy-- Develop a hunter satisfaction index

Rationale: *While deer hunter numbers and hunting days can provide measures of hunting demand, recreational satisfaction is more complex and includes many other elements of the hunting experience like seeing deer, and deer sign, seeing deer with large antlers, being outdoors, and a host of others. Managing for specific components of hunter satisfaction can enhance the overall recreational experience. High hunter satisfaction will help retain both hunting and hunter as necessary and important deer management tools.*

Strategy-- Identify and develop effective methods for determining the preferences of the public necessary to achieve a high level of customer satisfaction with regard to deer management.

Strategy-- Develop an ongoing public dialog that engages stakeholders, garners public support, and facilitates proactive white-tailed deer management

Objective 3

Manage deer-related impacts at an acceptable level.

Rationale: D*eer damage to Florida's agricultural, silvilcultural, and horticultural industries is currently not monitored. Yet acreage enrolled in the depredating deer program each year is rising sharply. No reliable estimate of property loss or human safety impacts from deer-vehicle encounters is currently available.*

Strategy-- Evaluate the agricultural, silvicultural, horticultural and human safety impacts caused by deer

Strategy-- Conduct a comprehensive review of the agency's current deer depredation program and take action to maximize its effectiveness at minimizing deer damage complaints

Strategy-- Promote hunting as the primary tool for alleviating crop depredation

Strategy-- Provide deer management technical assistance to communities and landowners where feasible

Strategy-- Develop and promote educational materials that deal specifically with deer damage prevention and abatement techniques

Objective 4

Develop a White-tailed Deer Information Portal to make it easy for customers to access harvest records, rutting dates, Florida Buck Registry entries, FAQs on deer and deer hunting, current research, and education materials.

Rationale: *White-tailed deer are the most popular game species in Florida. A great majority of Floridians (>71%) currently have access to the Internet (Duda et al. 2005). Customer questions concerning deer harvest, reproductive cycles, and population estimates make up a significant portion of the total information requests our agency receives during September-December. An acute need exists to make deer-related information available, in a useful format, to FWC staff and to the public.*

Strategy-- Coordinate and integrate deer-related data collection activities across divisions and offices to provide value-added reporting of deer management and harvest data to the public

Strategy—Develop and distribute educational materials about white-tailed deer biology, ecology, behavior, and management and about the often competing demands society places on available deer resources

Habitat Goal

Manage deer habitats consistent with ecosystem health, deer population goals, and customer satisfaction goals.

Objective 1

Assess the amount and relative quality of deer habitat throughout Florida by DMU

Rationale: *Habitat quality is the cornerstone of deer herd productivity. Knowledge of the type, geographic distribution, and quantity of habitat types will be essential to the development of DMUs, and to better enable agency managers to maximize recreational opportunity, provide a greater diversity of deer hunting experiences, reduce negative impacts, and increase both hunter and nonhunter satisfaction.*

Strategy-- Conduct an inventory and assessment of deer habitat quality

Strategy-- Monitor changes in land use that affect deer habitat quality and quantity

Strategy—Evaluate adequacy of existing public land management plans in addressing deer management and recommend changes as necessary

Objective 2

Promote deer habitat management practices that are compatible with the needs of diverse native wildlife species, and humans on private and public lands.

Strategy-- Provide technical assistance to private landowners regarding habitat management practices that will benefit white-tailed deer.

Strategy-- Support management objectives on public lands that enhance white-tailed deer habitat

Strategy-- Promote habitat management practices that provide long-term benefits to a diversity of wildlife species including white-tailed deer

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