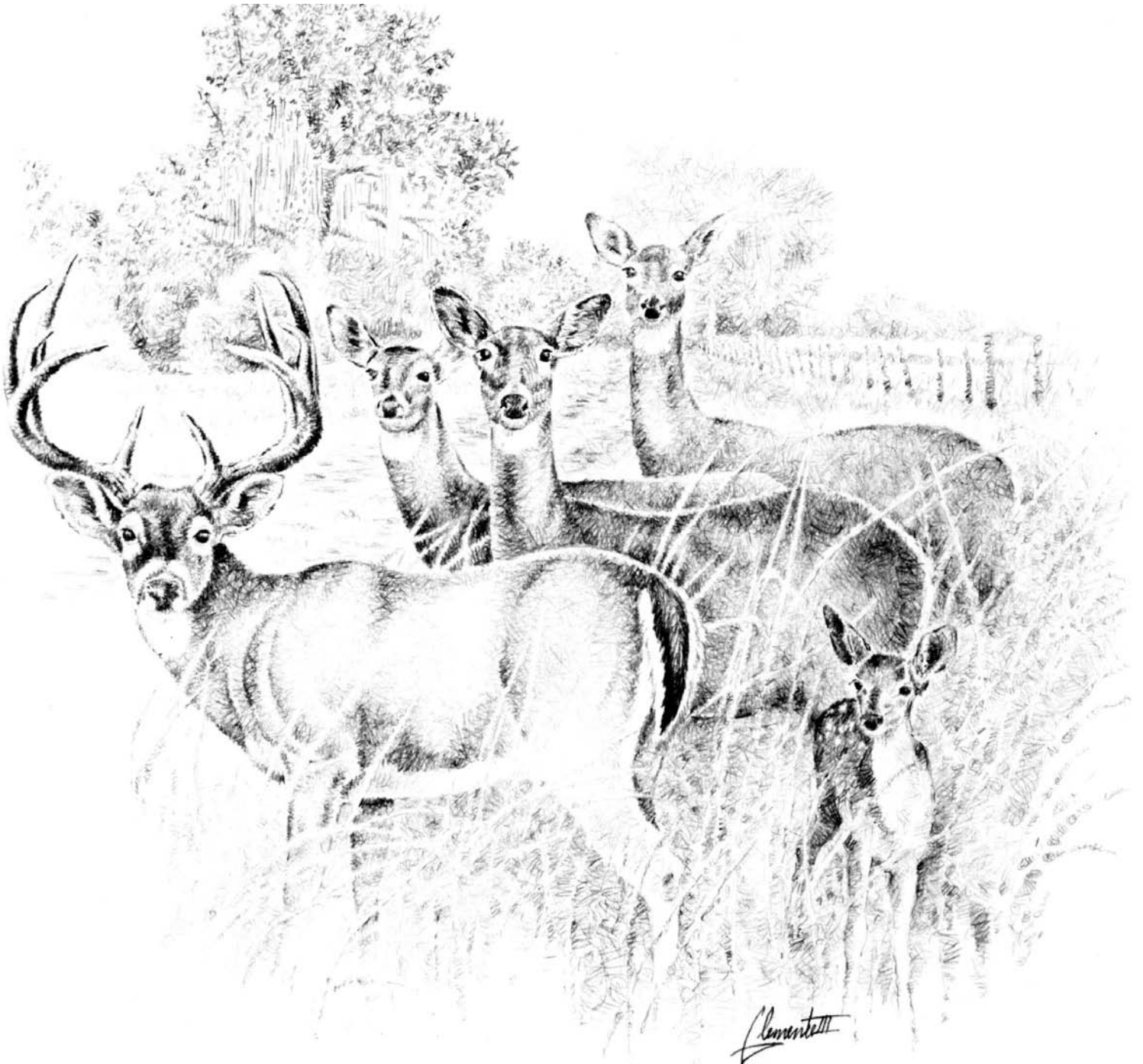
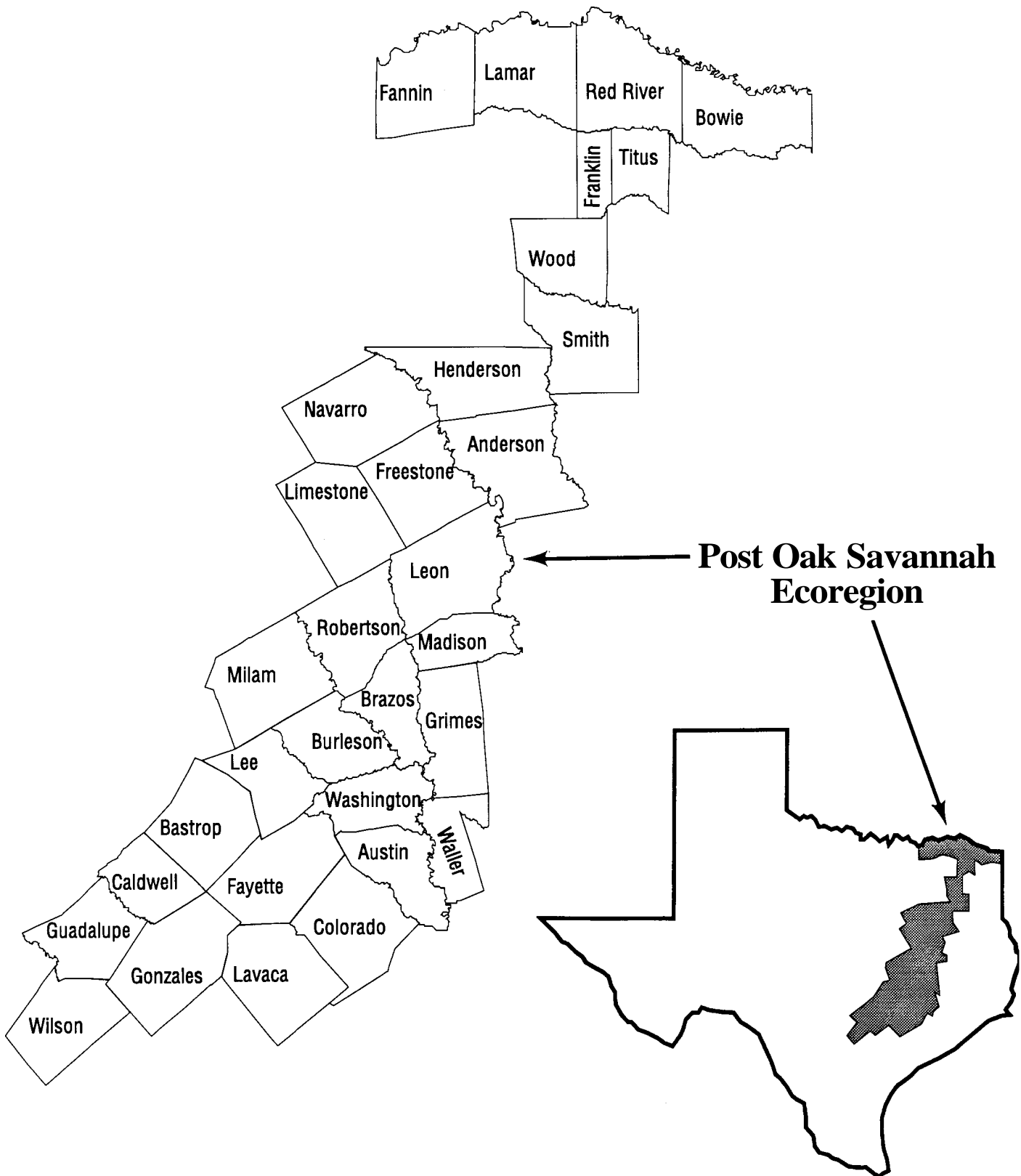


The Post Oak Savannah Deer Herd Past, Present, Future

by
David W. Rideout
Wildlife Biologist





**Post Oak Savannah
Ecoregion**

The Post Oak Savannah Deer Herd Past, Present, Future

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by

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Introduction

The white-tailed deer is a very popular game animal in the Post Oak Savannah ecological area of Texas. It's grace, quickness, and beauty certainly enhance anyone's outdoor experience. Sportsmen look forward every fall to the opportunity of matching wits with these elusive residents of the openings and woods. Recognizing the importance and interest generated by these game animals, Texas Parks and Wildlife Department (TPWD) wildlife biologists expend a great amount of time and effort on deer research and surveys to monitor deer populations in the Post Oak Savannah.

Approximately 100,000 hunters each year spend over 800,000 days hunting deer in these post oak woods. This represents a significant economic impact in this region, especially in many of the rural communities. Currently, only about 19 percent of the existing deer range in the Post Oak Savannah is being leased for deer hunting and is controlled by just 11 percent of the overall landowners. Despite this relatively low utilization of the total available acreage, money spent annually by hunters on transportation, food and lodging, equipment, supplies, licenses, and other hunting-related items add up to an estimated \$732 per hunter. Overall, deer hunters in the Post Oak Savannah contribute about \$73,200,000 to the economy each year! An estimated 36 percent of these hunters lease land for deer hunting in the region, paying an average of \$300 to \$743 for their share of the leases, generating at least \$10,800,000 in revenue for landowners in the region.

Deer populations increased dramatically in many Post Oak counties during the early 1960s, following major restocking efforts during the 1940s and 1950s by private individuals and TPWD's predecessor, the Texas Game and Fish

Commission (TGFC). During the late 1960s deer populations began to decrease in some counties. Some declines were drastic, to the dismay of sportsmen and others who had become accustomed to seeing herds of deer in pastures adjacent to county roads and highways. What had happened? This report summarizes survey and research results relative to the status of white-tailed deer in the Post Oak Savannah Ecoregion of Texas (map inside front cover) and examines some of the factors that may cause fluctuations in deer populations.

The Post Oak Savannah

The Post Oak Savannah Ecoregion encompasses approximately 8.5 million acres and extends in a narrow irregular belt from the Red River in Northeast Texas to near Victoria in South Texas. There are 32 counties in this area representative of the Post Oak Savannah vegetative type. This area is bounded on the east by the Pineywoods, on the west by the Blackland Prairies, and on the south by the Coastal Prairies and South Texas Plains Ecoregions. Beginning with the Red River at the northern tier of counties, 10 rivers and their associated creeks transect the area and contribute to the productivity of this ecoregion. The additional nine rivers from north to south are the Sulphur, Sabine, Neches, Trinity, Navasota, Brazos, Colorado, Navidad, and Lavaca. Elevation of the nearly level to gently rolling terrain ranges from



300 feet in the south to 800 feet above sea level in the north. Annual rainfall varies from 35 to 45 inches from west to east. Light-colored, acidic, and highly permeable sandy loams or sands are the common surface layer on the uplands. Underlying much of these upland surface soils is a shallow layer of nearly impervious clay pan soils. Bottomland sites are light brown to acid dark gray soils, ranging in texture from sandy loam to clays, and are generally higher in nutrients than upland soils.

Much of the uplands were originally savannahs (native grasses with scattered clumps of primarily post oak trees). Since the early 1800s, soil disturbance and land clearing practices by farmers and ranchers have resulted in a higher density of smaller trees, and in the southern area, more thick undergrowth of vegetation, especially yaupon. Bottomlands in the early 1800s were typically composed of large hardwoods with very little understory vegetation. Many bottomlands have now been cut over, cleared and planted as pastures for cattle. Others have thick understories resulting from timber cutting or various soil disturbances, or are relatively open due to continuous grazing.

Typical associated vegetation present on upland sites in the Post Oak Savannah are post oak, blackjack oak, water oak, sandjack oak, red oak, eastern red cedar, black hickory, winged elm, hackberry, yaupon, and mesquite in the western part and live oak trees in the south. Common shrubs and vines are American beautyberry, coralberry, trumpet creeper, hawthorne, dewberry, sumac, rattan-vine, greenbriar, grape, and poison-oak. Some of the grasses and forbs (weeds) found on upland sites are little bluestem, silver bluestem, sand lovegrass, beaked panicum, brownseed paspalum, longleaf uniola, three-awn, sprangletop, tick-clover,

partridge pea, yankeeweed ragweed, croton, primrose, spiderwort, and false indigo.

Typical associated vegetation on bottomland areas in the Post Oak Savannah are water oak, overcup oak, willow oak, cedar elm, water elm, American elm, southern red oak, white oak, black willow, hackberry, sweetgum, cottonwood, red ash, sycamore, pecan, water hickory, roughleaf dogwood, and bois d'arc trees. Common shrubs and vines are coralberry, dewberry, greenbriar, buttonbush, muscadine grape, and poison-oak. Some of the grasses and forbs found on bottomland sites are Dallisgrass, switchgrass, rescuegrass, bermuda, eastern gramagrass, Canada wildrye, Johnsongrass, giant ragweed, sumpweed, and eryngo.

The History of White-tailed Deer in the Post Oak Savannah

Exploitation: Early Settlement - 1936

Wildlife was abundant in the Post Oak Savannah, according to written accounts from the early explorers and settlers in the 1800s. White-tailed deer, wild turkey, bison, black bear, squirrel, mountain lion, red wolf, and the now extinct passenger pigeon were common and most were hunted to provide food or to protect livestock in order for these settlers to survive in this "new land".

Native American Indians had lived off this abundance for centuries with relatively little impact on these wildlife populations.





Game laws were first enacted in Texas in 1861, but in 1903 the limit on deer was still a very liberal six bucks per season. During the early 1900s, deer and other wildlife continued to decline largely due to year around hunting with few bag limits and little observance of the game laws that had been enacted. Eventually, deer hunting was mostly unproductive. In 1919, only six game wardens patrolled the entire state.

Restoration 1936 - 1993

In 1929, deer trapping and restocking operations were begun in Texas and many counties in the Post Oak Savannah ecoregion received deer in varying degrees from 1936 to the early 1950s (Table 1). Most of these deer came from the Edwards Plateau and South Texas ecoregions where surplus deer were available. Populations thrived in many areas due to increased enforcement of game laws, abundance of native pastures adjacent to upland and bottomland hardwoods, and low cattle numbers. Deer hunting has generally been permitted in restocked counties three to five years after restocking, depending on population response.



In recent years, more landowners and hunters have realized that hunting regulations alone will not improve deer quantity and quality. Good quality habitat has decreased since those early years, due primarily to decreasing size of individual tracts of land, and consequently more intensive use of the land. The result is less woods and native pasture are available for use by deer.

Many land managers are now becoming more involved in improving existing wildlife habitat and actively managing their deer populations. Deer are present in all of the Post Oak Savannah Ecoregion having suitable habitat. This amounts to 7,800,000 acres or about 90 percent of the total acreage in the ecoregion that is occupied by deer to some degree.





Table 1: Post Oak Savannah Deer Stocking History, 1936-94.

County	Year	Number of Deer Stocked	County	Year	Number of Deer Stocked
Anderson	1948-49	182	Henderson (continued)	1975-76	100
	1950-51	98		1976-77	100
	1987-88	313		1977-78	100
	TOTAL	593		TOTAL	618
Austin	1954-55	39	Lamar	1954-55	48
	1956-57	14		1955-56	60
	TOTAL	53		TOTAL	108
Bastrop	1960-61	100	Lavaca		0
	1963-64	41	Lee	1965-66	144
	1964-65	39	Leon	1936-37	97
	1977-78	12	Limestone		0
	1978-79	59	Madison		0
	1979-80	22	Milam	1954-55	28
	TOTAL	273		1955-56	30
Bowie	1945-56	40		1980-81	30
	1947-48	19	1983-84	19	
	1948-49	84	1985-86	9	
	1949-50	178	1986-87	130	
	1950-51	52	TOTAL	246	
	1957-58	33	Navarro	1983-84	46
TOTAL	406	1984-85		53	
Brazos	1944-45	50		TOTAL	99
	1953-54	4	Red River	1939-40	49
	TOTAL	54		1956-57	100
Burlison	1954-55	56		TOTAL	149
	1955-56	101	Robertson	1939-40	59
	1956-57	8		1940-41	48
	TOTAL	165		1941-42	68
Caldwell	1968-69	24		1942-43	37
	1969-70	14	1943-44	87	
	1970-71	36	1971-72	40	
	TOTAL	74	TOTAL	339	
	Colorado		0	Smith	1973-74
Fannin	1984-85	54	Titus	1953-54	115
Fayette	1966-67	22		1954-55	17
Franklin		0		1955-56	9
Freestone	1947-48	296		1957-58	29
	1948-49	348		1958-59	21
	1949-50	76		1960-61	20
	1950-51	32		1965-66	20
	TOTAL	752		1968-69	21
Gonzales	1961-62	11	TOTAL	252	
Grimes	1938-39	10	Waller	1942-43	2
	1949-50	4	Washington	1954-55	30
	1956-57	9		1955-56	99
	1968-69	14		1956-57	8
	TOTAL	37		TOTAL	137
Guadalupe	1938-39	23	Wilson	1965-66	14
	1941-42	10	Wood		0
	1958-59	10			
	1964-65	5			
	TOTAL	48			
Henderson	1949-50	109			
	1953-54	137	POST OAK SAVANNAH	GRAND TOTAL	4,761
	1954-55	72			



Recent Trends of the Post Oak Savannah Deer Herd

Deer Population Characteristics

Population Trends

By the late 1950s deer populations had increased in some localized areas to densities of up to one deer per four acres. The highest deer numbers were usually in bottomland hardwood areas with good protection from illegal hunting and not subjected to continuous grazing by cattle. Deer numbers in upland areas increased slower, but some areas soon rivaled bottomland areas. Abundance of high quality browse, forbs, fruit, and mast furnished these new deer herds with the necessary nutrition for good herd health. Fawn production and survival was high, thus populations steadily increased.

Everything looked good until the mid to late 1960s when several indicators pointed to a potential crash. Biologists began to see areas in the central portion of the Post Oak Savannah where over 50 percent of the first choice browse was being utilized by deer. Second and even third choice browse species were being used at increased rates. (Browse is rated 1st, 2nd, 3rd choice depending on palatability and preference by deer for food.) Fawn survival was often only 30 - 40 percent where in previous years it had been 60 - 80 percent. These were indications that the carrying capacity of the range for deer had been reached and was exceeded in many locations. Deer numbers decreased. Many landowners and hunters blamed this decrease solely on the harvesting of antlerless deer, overlooking or discounting the fact that increases in cattle and tame pastures had

reduced the amount and quality of forage available for deer.

These "boom and crash" fluctuations periodically occurred on a localized to sometimes multi-county level throughout the Post Oak Savannah. Freestone and Colorado County deer population trends (Figure 1 and 2) are typical of population fluctuations that have occurred on a county level from the early 1960s through 1993. The overall population declined during the late 1960s to the late 1970s and then progressively increased to a high of approximately 560,000 deer or 70 deer per 1,000 acres in 1984 (Figure 3). Biologists monitoring these populations again began to see the danger signals. Browse lines (over-eaten vegetation below 3 - 4 feet, or normal reach of deer) became obvious as vegetation was overused, deer in poor condition could be seen feeding in herds during the middle of the day, fawn survival was constantly under 30 percent, and many 1.5 year-old bucks had antlers with only 2 - 3 points instead of 6 - 8 points that are typical of healthy bucks in this age class. To compound the situation, most of the Post Oak Savannah received below normal rainfall and poor acorn production in three successive years, from 1987 through 1989. Deer numbers seriously declined. In 1992, there was an estimated 227,000 deer in the Post Oak Savannah, a 59 percent decrease from 1984. In 1993, the overall population increased slightly to approximately 284,000 deer. This increase was attributed to above average rainfall and improved acorn production in 1991, 1992, and 1993.



Figure 1: Estimated Deer Population 1964-93, Freestone County.

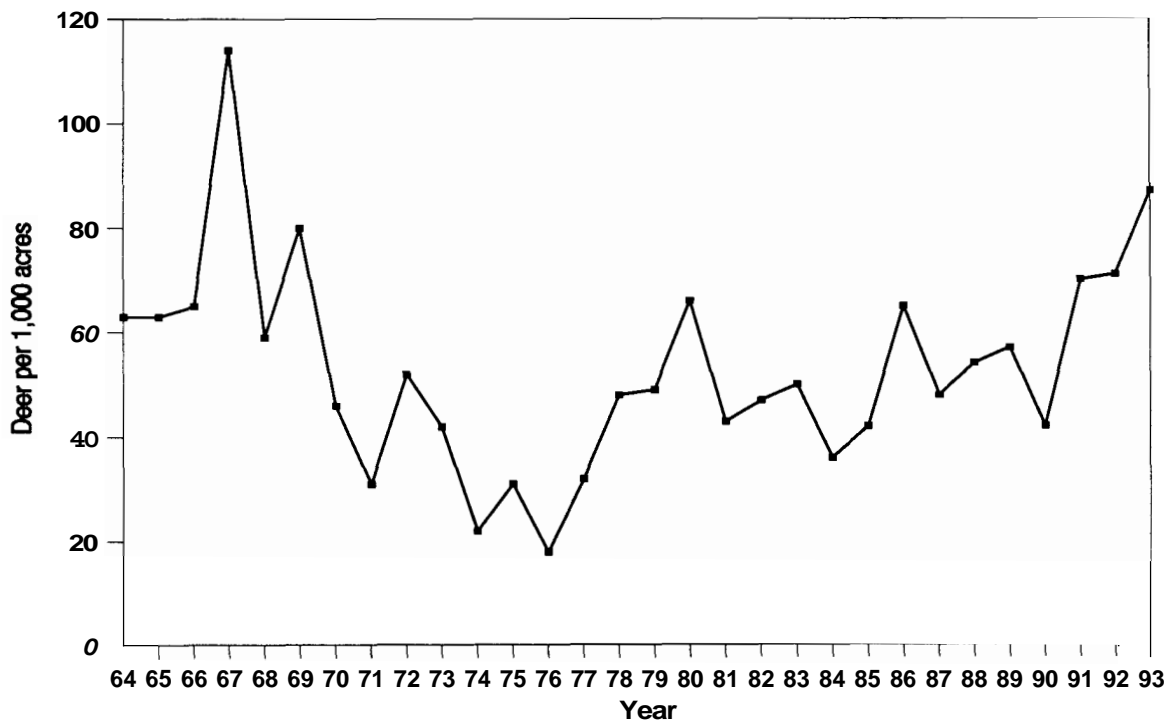


Figure 2: Estimated Deer Population 1963-93, Colorado County





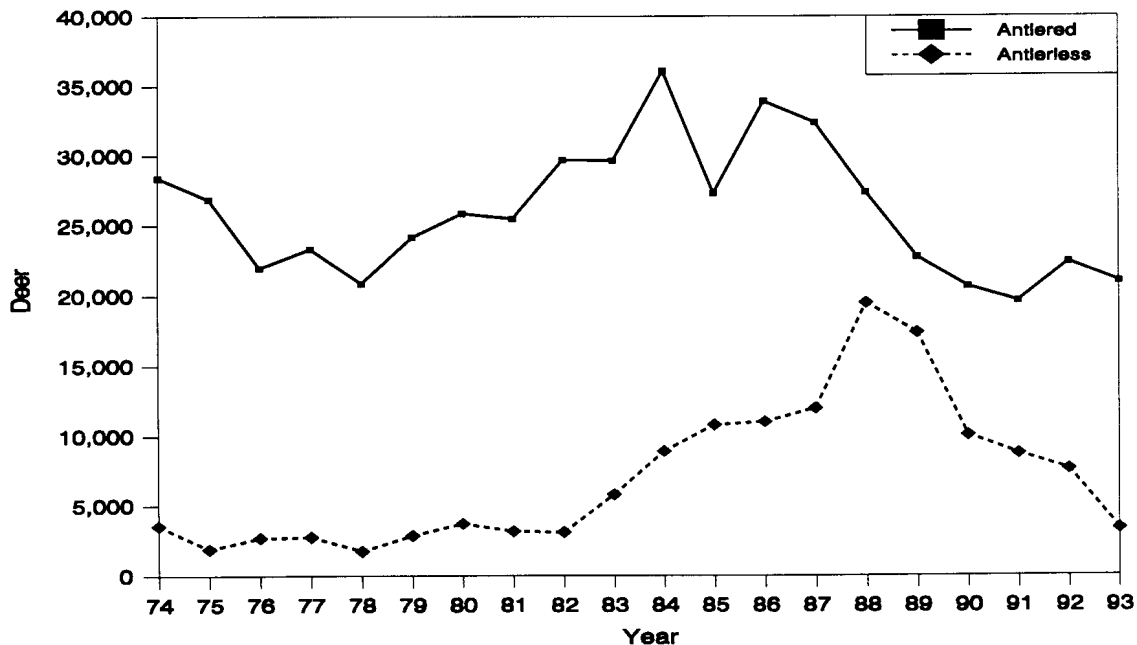
Antlerless permits continued to be issued to landowners through 1987 in an effort to balance the deer herd to local habitat conditions. During the 1988-89 and 1989-98 hunting season, antlerless deer were harvested in eight mid-Post Oak counties (Anderson, Freestone, Leon, Limestone, Robertson, Madison, Brazos, Grimes) through season long, either-sex bag regulations. Under these regulations, each hunter was allowed up to two antlerless deer, using the "doe" tags on the

hunting license. The number of antlerless deer harvested for each particular tract of land was left up to the discretion and judgment of the landowner. In these eight counties, a total of 12,524 antlerless deer were harvested in 1988-89 and 9,893 in 1989-90, compared to 6,003 in 1987-88. Antlerless permit issuance on a limited basis was resumed in these counties in 1990-91 with 1,719 antlerless deer being harvested (Figure 4).

Figure 3: White-tailed Deer Population Post Oak Savannah Ecoregion, 1974-93.



Figure 4: White-tailed Deer Harvest Post Oak Savannah Ecoregion, 1974-93.





Deer Population Survey Methods

In the Post Oak Savannah, several techniques have been used over the years to estimate deer populations. All sampling techniques rely on surveying representative habitat along the same route, during the same time of year, and using the same technique so results can be compared between years, resulting in **reliable trend data**. Two-mile Hahn walking cruise surveys and deer track count transects were used in varying degrees from the 1950s through mid '70s, with heavy emphasis on Hahn surveys. In 1975, development of the 15-mile spotlight survey technique resulted in the gradual adoption of this technique over Hahn surveys in all but some of the lower portion of the Post Oak Savannah. More than twice the amount of habitat can be surveyed by three TPWD personnel, spotlighting from a pickup, in about the same time as it would take to survey six miles by personnel walking three Hahn transects. During the late summer and fall of 1993, TPWD biologists and technicians walked 59 Hahn lines and conducted 66 spotlight surveys, covering 1,071 miles and sampling 60,565 acres in the annual effort to monitor deer populations.



Herd Composition

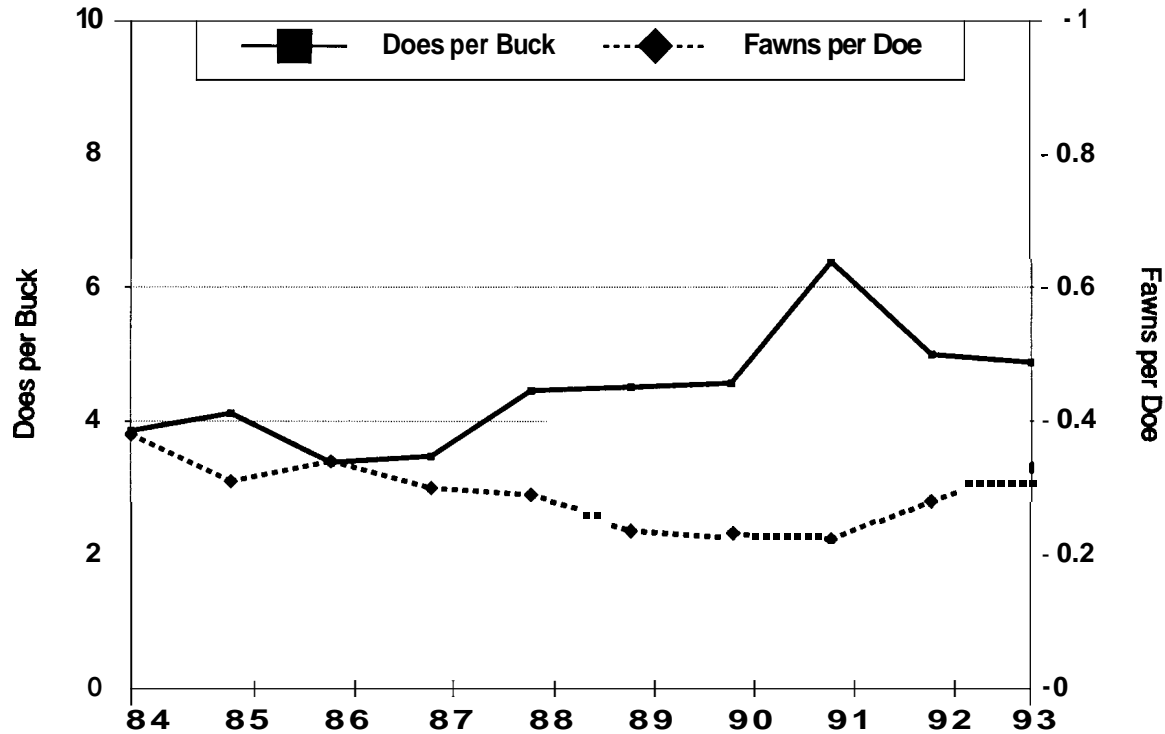
Although it's important to know deer numbers, knowing herd composition (what percentage of the herd is comprised of bucks, does, and fawns) is more crucial to the management of deer populations. The ratio of bucks to does provides information on survival of both sexes and is an indicator of hunting pressure on each sex. Fall fawn per doe ratios provide a good index of **fawn survival, one of the best overall indicators of herd health**. Herd composition data is obtained from late afternoon mobile survey transects, incidental observations, and from hunter observations during archery and early gun season when it is still easy to distinguish between adults and fawns.

Fall 1993 surveys showed that the overall herd composition in the Post Oak Savannah was 13 percent bucks, 65 percent does, and 21 percent fawns. A more desirable, healthier herd composition would be nearer to 22 percent bucks, 45 percent does, and 33 percent fawns. In 1993, the doe per buck ratio was a high 4.88 does per buck (Figure 5). An average of only one fawn was produced for every three doe, or a low 0.33 fawns per doe (Figure 5). (A doe/buck ratio of less than three does per buck and at least .80 fawns per doe is desired). **The high doe/buck ratio is a result of some of the heaviest hunting pressure in Texas on the buck segment of the herd (high buck removal) and on poor fawn survival (low buck replacement). Since 1983, the fawn per doe ratio has**





Figure 5 : Doe:Buck & Fawn:Doe Ratios, Post Oak Savannah Ecoregion, 1984-93, Census Data



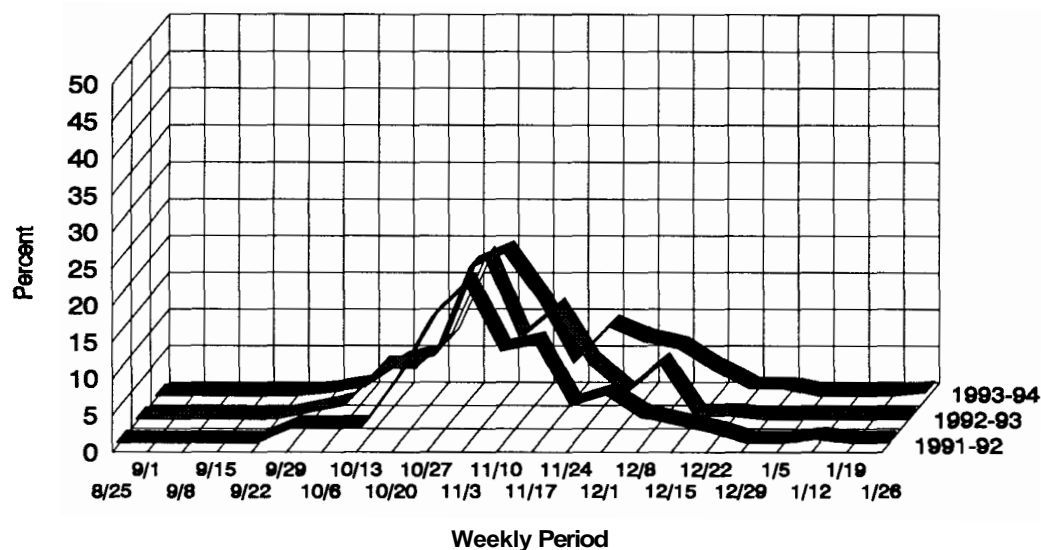
averaged only 0.30. In some areas, bucks are produced at a lower rate than their overall mortality rate. Good fawn survival of 60 to 80 percent occurred from the 1950s until the late 1960's. Good fawn production/survival and therefore high buck replacement still occurs in some localities where deer habitat management is a priority to land managers

Some landowners, hunters, and deer managers have been concerned that there may not be enough bucks to breed the does. Thus, low fawn replacement could be the result of an insufficient number of does being bred. Biologists have studied the problem since 1959. A three-year breeding chronology study was completed by TPWD in 1994, involving collection of does between January and April each year. This study showed that at least 90 percent of adult

does examined were pregnant, and these averaged 1.5 fetuses each. Sixty percent of the fetuses were male. **This study confirmed that sufficient does are being bred and good fawn production is occurring. Barren does are very uncommon. Poor fawn replacement is due to fawns not surviving after being born.** Ninety percent of the does were bred between about October 20 and December 1, with a least 50 percent being bred by the second week of November (Figure 6). With a gestation period of 200 days, 90 percent of the fawns in the Post Oak Savannah could be expected to be born between about May 8 and June 20, with at least 50 percent being born by the second week of May. Healthy deer herds normally have a more concise, less spread-out breeding period lasting 4-6 weeks, while less healthy, stressed populations have a more elongated, spread-out 3-4 month breeding period.



Figure 6: Frequency of Occurrence of Fetuses by Estimated Conception Dates, Post Oak Savannah Ecoregion.



Age Structure

The percent of bucks and does in the different age classes, called the herd's age structure, is estimated each fall by TPWD biologists by aging a sample of deer at storage and processing facilities. This information from deer killed by hunters is important in evaluating the impact of harvest and hunting pressure on the deer herd. Harvest data is generally reflective of the actual herd age structure. Deer herds subjected to heavy hunting pressure have a younger age structure, with a higher percentage of deer in younger age classes, and a small percentage in older age classes. In herds with low hunting pressure, the average age is higher and the percentage of deer in the different age classes is more evenly distributed.

The percentage of yearling bucks, those 1.5 years old, harvested in the Post Oak Savannah by hunters is high, averaging 57 percent from 1972 through 1993. In the 1950s and the early 1970s, the percentage of yearling bucks harvested fell below 50 percent.

But, since then only about five percent of the bucks harvested are 4.5 years or older. In 1993-94, TPWD personnel aged 772 bucks harvested by hunters in the Post Oak Savannah. Yearling bucks comprised 51 percent of the bucks sampled and the average age of all bucks was 2.3 years. Only five percent of the bucks were 4.5 years or older (Table 2). Conversely, the average age of harvested adult does (1.5 year +) was 3.2 years of age and 74 percent were 2.5 years of age or older, indicating light hunting pressure on does.





Table 2: Age Structure of Bucks Harvested in Ecoregions of Texas, 1993-94.
(from sample of hunter harvested deer)

Age (Years)	Post Oak		Cross Timbers		Piney-woods		Blackland Prairies		Gulf Prairies		Edwards Plateau		South TX Plains	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
1.5	397	51.4	279	50.6	415	46.5	27	45.8	63	40.4	404	26.6	238	22.8
2.5	220	28.5	115	20.9	265	29.7	22	37.3	49	31.4	319	21.0	134	12.8
3.5	114	14.8	96	17.4	151	16.9	6	10.2	25	16.0	376	24.7	214	20.5
4.5	30	3.9	42	7.6	41	4.6	4	6.8	11	7.1	206	13.5	145	13.9
5.5	9	1.2	13	2.4	17	1.9	0	0.0	5	3.2	137	9.0	145	13.9
6.5	2	0.3	5	0.9	3	0.3	0	0.0	0	0.0	62	4.1	119	11.4
7.5	0	0.0	1	0.0	0	0.0	0	0.0	3	1.9	10	0.7	36	3.5
8.5+	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	0.5	12	1.2
Totals	772		551		892		59		156		1,521		1,043	

Antler size, especially in 1.5 age class deer, is an indication of overall herd health. Normally, healthy 1.5 year old bucks have 6 - 8 point heavier antlers rather than smaller 2 - 3 point antlers. Antler size and number of points usually increase each succeeding year, until about 5.5 - 7.5 years of age, when bucks reach their peak in antler growth. Antler size usually decreases after 7.5 years of age due primarily to deer's teeth wearing down, making chewing food and thus receiving sufficient nutrition more difficult.

Table 3 provides information on the age and average antler measurements of 772 hunter harvested bucks in the ecoregion, aged and measured by TPWD personnel during the 1993-94 season.

The weight of white-tailed deer, especially bucks, normally increases with age until about 7.5 years of age. Table 4 provides information, collected by TPWD personnel, on the average field-dressed weight, relative to age class, of 278 male and 136 female deer killed by hunters during the 1989-90 hunting Season in the Post Oak Savannah ecoregion.

Table 3: Age and Antler Measurements of White-tailed Bucks in Post Oak Savannah, 1993-94 Hunting Season (from sample of hunter-harvested deer).

Age Class (years)	Sample Size	Percent	Avg. Inside Antler Spread (inches)	Avg. Antler Base Cir. (inches)	Avg. Main Beam Length (inches)	Avg. Antler Points
1.5	397	51.4	7.8	2.4	9.2	4.9
2.5	220	28.5	11.5	3.0	12.0	7.1
3.5	114	14.8	13.2	3.4	15.6	8.0
4.5	30	3.9	14.2	3.6	17.2	8.6
5.5	9	1.2	17.3	4.3	19.1	9.9
6.5	2	0.3	17.4	4.0	18.3	12.0



Table 4: Age and Average Field-dressed Weight of Male and Female White-tailed Deer in Post Oak Savannah, 1989-90 Hunting Season (from sample of hunter-harvested deer)

Males			Females		
Age Class (years)	Number	Avg. Field-dressed Weight (lbs.)	Age Class (years)	Number	Avg. Field-dressed Weight (lbs.)
0.5	4	43	0.5	14	38
1.5	164	74	1.5	16	62
2.5	73	86	2.5	35	69
3.5	24	100	3.5	34	71
4.5	9	103	4.5	14	76
5.5	3	99	5.5	16	71
6.5	0	--	6.5	7	66
7.5	1	90	7.5	0	--
Average Weight (excluding 0.5 year)		81	Average Weight (excluding 0.5 year)		70

Hunter Trends

Hunter Numbers

The large metropolitan areas of Dallas, Fort Worth, Waco, Austin, Houston, and the smaller cities such as Paris, Tyler, and Bryan-College Station, and numerous local communities are in the Post Oak Savannah or nearby. These communities have provided an abundant supply of hunters ever since Post Oak deer populations increased to huntable numbers in the late 1950s. Since 1974-75, when the standardized annual statewide big game harvest survey was initiated to provide reliable estimates on an ecoregion basis, the estimated number of deer hunters in the Post Oak Savannah has averaged approximately 100,000 each year (Figure 7). In 1985-86, over 114,000 hunters were attracted to the area. This may be attributed to the 1984-85 season when over 108,000 hunters had a success rate of 42 percent, a high in recent years.

The Post Oak Savannah is subjected to the heaviest deer hunting pressure of all of the ecoregions in Texas. From 1984 through 1993, there was an **average of 13 hunters per 1,000 acres of deer range (Table 5)**. During the late 1980s and early 1990s, hunter concentrations were highest in Smith, Fannin, Wood, Anderson, Leon, Navarro, Austin, Washington, Lavaca, and Fayette County. These counties **averaged 20 hunters per 1,000 acres**, or one hunter per 50 acres. During the 1993-94 season in the Post Oak Savannah, there were about 12 hunters per 1,000 acres of deer range, or **one hunter for about every 3 deer**. In comparison, the Pineywoods and Edwards Plateau Ecoregions had 10 and 9 hunters per 1,000 acres, and one hunter for about every 4 and 8 deer, respectively.





Figure 7: White-tailed Deer Hunters Post Oak Savannah Ecoregion, 1974-93.

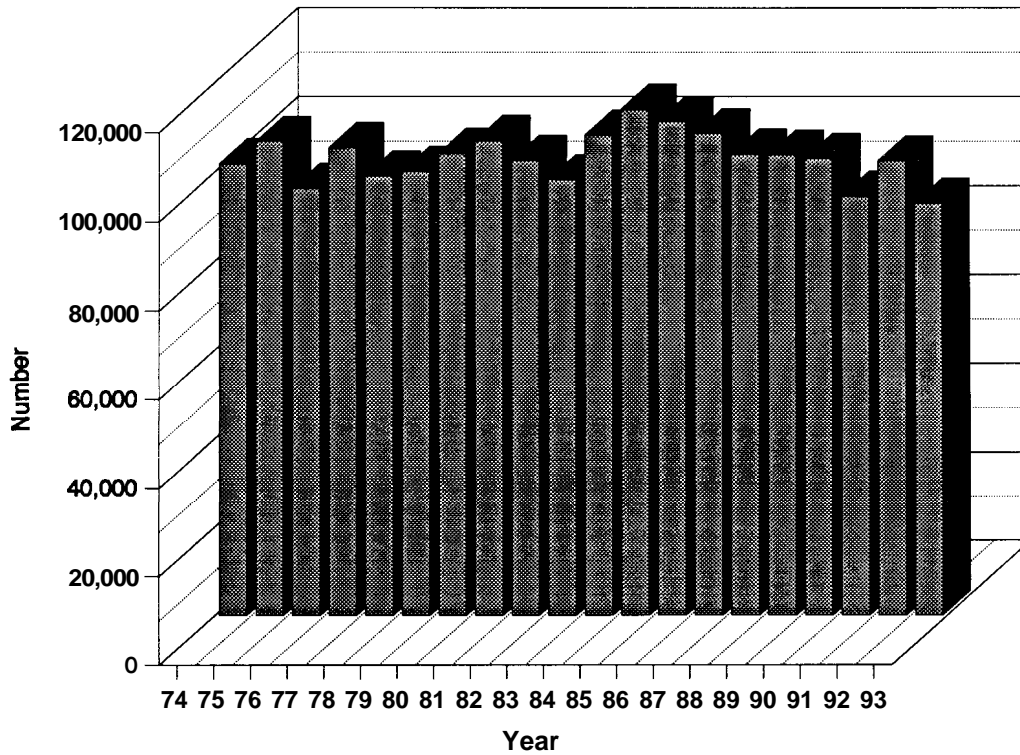


Table 5: Comparison of White-tailed Deer Hunter Density in Texas Ecoregions, Ten Year Average 1984-93.

Ecoregion	Hunters/ 1,000 acres	Acres / Hunter
Post Oak Savannah	13	77
Gulf Prairies & Marshes	12	83
Pineywoods	11	91
Cross Timbers	10	100
Blackland Prairies	10	100
Edwards Plateau	9	111
Rolling Plains	7	143
South Texas	6	167
High Plains	2	500
Trans-Pecos	2	500



Hunter Effort

The number of hunters multiplied by the average number of days hunted provides a measure of hunter effort expressed as "hunter-days". In 1974-75, the average Post Oak Savannah deer hunter hunted 6 days during the season. Over the next 18 years this steadily increased to 8 days per hunter during the 1993-94 season. Thus, hunter effort also increased from nearly 569,000 to over 741,000 hunter days during this same period, a 30 percent increase. In 1993-94, the Post Oak Savannah ranked fifth among the ecoregions in Texas in the total number of days of deer hunting recreation. The Edwards Plateau led with 1.4 million hunter-days followed by the Pineywoods with 1.1 million, and South Texas with 960,000 hunter-days.

Hunter Success

Hunting success is one indicator of deer numbers. As deer become more plentiful and available to hunters, hunter success normally increases. Conversely, as deer numbers decrease, hunter success decreases. From 1974 to 1984, deer hunter success increased from 25 to 42 percent in the Post Oak Savannah. Hunter success then decreased to 30 percent in 1993-94. In comparison, 71 percent of Edwards Plateau hunters harvested a deer in 1993-94, the highest success rate in the state. The trend in hunter success closely follows the trend in deer numbers.

Harvest Trends

Buck Harvest

Over the past 20 years, buck harvest has comprised 58 to 93 percent of the total harvest, depending on antlerless

harvest regulations that were in effect at the time in the various counties of the ecoregion. In 1974-75, 28,406 bucks were estimated to have been harvested in the Post Oak Savannah. Buck harvest decreased to 20,859 in 1978-79, then steadily increased to 36,079 in 1984-85, tracking closely the estimated trend of the overall population. Antlered harvest then decreased to a low of 19,605 in 1991-92. The 1993-94 harvest was estimated at 20,993 bucks (Figure 4).

Since the 1950s, the seasonal bag limit has been either one or two bucks per hunter, depending on the particular county and the year. Spike antlered bucks were not legal in certain specially regulated (general law) counties before the 1983 Wildlife Conservation Act was passed. One buck limits have generally been implemented in counties subjected to heavy hunting pressure and with over 50 percent yearling (1.5 year old) bucks in the total buck harvest. However, even where two bucks are legal in the state, harvest surveys indicate only 11 to 16 percent of the hunters actually harvest two bucks. Chronology of the antlered deer harvest in the Post Oak Savannah reveals that in most years, over 35 percent of the buck harvest occurs during the first seven days of the season, with 60 percent occurring during the first three weeks of the present eight week plus season.





Antlerless Harvest

Antlerless deer are harvested to reduce deer numbers and potential production to maintain sufficient nutritious vegetation available to sustain a healthy population. Different methods and combinations of seasons and bag limits have been used in the Post Oak Savannah during the past 35 years to facilitate antlerless deer management for landowners. In 1959-60, antlerless deer harvest was initiated in Brazos, Freestone, Grimes, Limestone, and Robertson County where deer populations were judged to have reached carrying capacity. Antlerless permits were issued to landowners by TPWD and landowners could issue these permits to hunters as they desired. The number of permits issued to landowners was based on late summer deer census results, habitat conditions, and the number of acres they owned.

This basic method of facilitating antlerless harvest continued in Post Oak Savannah counties in ensuing years as deer populations warranted. Unlimited antlerless permits were issued to landowners in Grimes County during the 1970-71 season on an experimental basis, resulting in an estimated harvest of 2,207 antlerless deer. Unlimited antlerless permits were also issued to landowners in Colorado and Lavaca County during the 1971-72 and 1972-73 season. An estimated 2,733 and 2,179 antlerless deer were harvested in Colorado County during these two seasons, while hunters in Lavaca County were estimated to have harvested 1,960 and 1,438 antlerless deer.

In 1974 the standardized annual statewide big game harvest survey was initiated and more reliable harvest estimates could be made on an ecoregion basis. That year, 3,551 antlerless deer were estimated to have been harvested in the Post Oak Savannah (Figure 4). This represented 11 percent of the total deer harvest in the

ecoregion that year. Antlerless harvest continued through 1982-83 at about the same rate and percentage. In 1984, the deer population peaked and antlerless harvest continued to increase as hunters took advantage of the high deer numbers.

During the 1988-89 and 1989-90 season, antlerless deer were harvested by hunters in Anderson, Freestone, Limestone, Leon, Robertson, Madison, Brazos, and Grimes County using only the antlerless tag off their hunting license. Antlerless harvest peaked in 1988-89 at 19,500 animals, 42 percent of the total harvest. Antlerless harvest tapered off as the overall population continued to decline primarily in response to habitat degradation that had occurred, and because, in some localized areas, overharvest of antlerless deer had possibly occurred during the 1988-89 and 1989-90 either-sex seasons. Traditional antlerless permit issuance was resumed in these counties in 1990-91.

In 1990-91, all 12 lower Post Oak counties began the "doe day" system of harvesting antlerless deer. Antlerless deer could be harvested without permits by hunters during the first and last two days or first and last nine days of the season. Relative deer density in each county determined the number of doe days.

In 1993-94, the Landowner Assisted Management Permit System (LAMPS) was initiated in the Post Oak Savannah, Pineywoods, and a few Blackland Prairies counties. LAMPS is an automated deer management permitting system that tailors antlerless deer harvest to the amount and type of deer habitat present on individual tracts of land. During this



first year of the program in the Post Oak Savannah, 3,548 LAMPS antlerless permits were issued for 1,078 qualified tracts of land totalling 1,068,632 acres, averaging a very conservative one permit per 301 acres.

Antlerless permits have also been issued to landowners that have requested assistance from TPWD biologists in managing the deer population and habitat on their individual property and are working under written recommendations or a Wildlife Habitat and Harvest Annual Recommendation (WHHAR).

Habitat Trends

Many factors influence and contribute to the health of a deer population. Most of these factors affect habitat, and the type and condition of habitat is what actually makes a deer population flourish, sputter, or die - **not rules and regulations**. Biologists use the term "habitat" to describe the physical things that affect animals where they live. These are basically food, water, cover, and their spatial distribution. If the required amount of any of these basic life needs are lacking at any time of the year, an animal or population will not be as healthy or able to reach its full potential. White-tailed deer can adjust to a variety of habitat changes. There are several land use practices that have or presently occur in the Post Oak Savannah that are critical in their potential to impact deer populations.

Deer Overpopulation

The number of deer an area will support is often a subject of debate in the Post Oak Savannah. Usually, landowners, hunters, and wildlife

watchers would prefer seeing two to three times more deer on a tract of land than the land can support over the long term. If the area has, or once had, high numbers of deer, why can't there always be that many deer there?

When populations increase to the extent that deer do not have sufficient nutritious native vegetation to sustain them in a healthy condition, deer populations are considered to have exceeded **carrying capacity** (A year-around diet consisting of 14 - 16 percent crude protein is necessary for deer to maintain herd health). The land will not support any more deer. When this occurs, browse lines on vegetation may be obvious, fawn survival is poor, body weight and antler size is poor, and losses from parasites and diseases increase due to malnutrition. Deer numbers "crash" as the changed vegetation cannot support as many deer as it previously could. After such abuse, it can take years for this vital portion of the habitat to recover. Often, the area will never support as many deer as before, because vegetation seldom has the opportunity to fully recover due to continued deer and/or cattle grazing pressure. **Generally, in the Post Oak Savannah, bottomland habitat will support over the entire year about one deer per 10 acres, and upland habitat about one deer per 25 acres.**

Cattle Grazing and Non-Native Pastureland

When deer were restocked in much of the Post Oak Savannah during the 1940s and 1950s, the cattle industry wasn't nearly as important to the local economy as it became in later years and is now. Cattle numbers were relatively low and rural acreage was mostly





expansive wooded tracts with scattered open areas of native grasses and forbs, **ideal deer habitat**. Thus, deer flourished. Beginning in the mid 1950s, acreage of previously "unproductive" upland woodlands and well-drained bottomlands were cleared and planted with non-native grasses such as Coastal Bermudagrass, thought to be highly valuable to improved cattle management. Two to three acres of this grass when managed and fertilized properly can support one cow. Aided by cost-share payments from the United States Agricultural Stabilization and Conservation Service, clearing and planting increased during the 1960s and 1970s, slowing down in the 1980's, but still occurring today. However, what was considered a boon to the cattle industry, has proven to be a detriment to deer. Much of the available deer food was removed. Most grasses, especially non-native grasses, are seldom utilized by deer. The deer's digestive system, unlike that of cattle, is unable to digest the coarse cellulose and fiber of mature grasses. Deer can utilize grass only when it is young and tender. Deer have been known to starve while their rumen is full of grass.

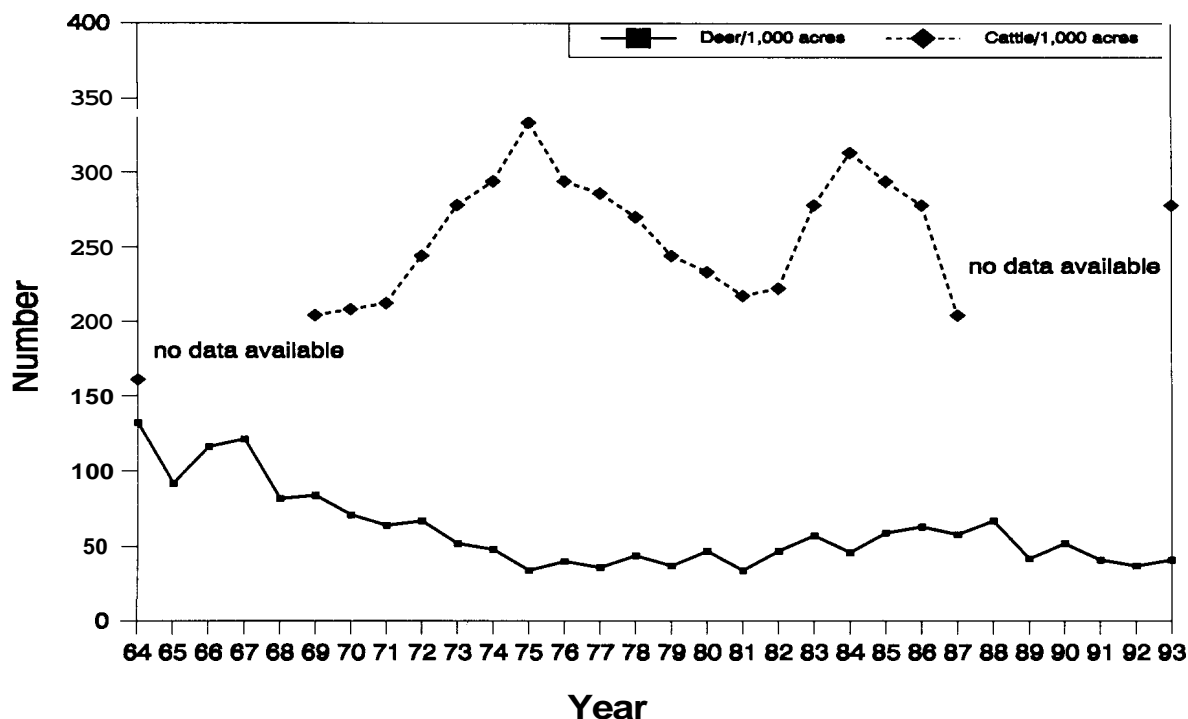


An estimated 25 percent of the Post Oak Savannah that was once woods or native pasture has been cleared and planted to non-native pasture during the past 35 years. More available pasture resulted in more cattle. From 1968 to 1993, overall cattle numbers in the Post Oak Savannah increased 22 percent. This translates to an average of one cow per every three acres of total acreage in this ecological area. **In six mid- Post Oak Savannah counties (Brazos, Burleson, Freestone, Grimes, Madison, and Robertson, Figure 8.) a 75 percent overall increase in cattle numbers from 1963 to 1992 was documented. In 1992, nine out of the 10 leading beef-producing cattle counties in Texas were located in the mid and lower Post Oak Savannah.** These counties, in descending order of ranking, were Fayette, Leon, Lavaca, Gonzales, Grimes, Anderson, Austin, Lee, and Robertson.

Cattle, especially cross-bred Brahman varieties, will browse the same vegetation that deer browse, if allowed. Cattle can be direct competitors with deer if they are allowed access to woodlands, especially on a year-around basis which is the normal ranching practice of the area. If pastures are grazed by cattle on a rotating basis, the impact on deer is lessened and can actually benefit deer. Unfortunately, the lack of adequate rotational grazing is one of the most important reasons for the current poor habitat quality and relatively lower deer numbers.



Figure 8: Comparison of Deer and Cattle Numbers, Six Mid-Post Oak Savannah Counties, 1964-93. (Brazos, Burleson, Freestone, Grimes, Madison, and Robertson)



Prescribed Burning

Before roads were common, lightning-caused fires burned freely and kept the woods relatively open. Native Americans and early settlers periodically burned woodlands and native grass openings in the Post Oak Savannah. Removal of old, unpalatable vegetation resulted in a profusion of tender vegetation that deer, bison, and livestock relished. With the advent of barbed wire fencing in the late 1800s, this practice became uncommon.

A few landowners are now beginning to use prescribed burning to make their land more productive. **Periodic winter prescribed burning of upland woods undergrowth and late summer prescribed burning of native grass openings is considered by wildlife biologists to be the single most beneficial land management practice for the Post Oak Savannah.** High tree density and sometimes thick under-

story in the upland post oak woodlands has occurred over the past 30 - 40 years. This situation, combined with continuous grazing by deer and cattle on the understory, has retarded new growth and decreased diversity. The result is less beneficial browse and forb species for deer. Prescribed burning can control brush and sapling growth by opening up the woods and allowing sunlight to reach the ground. This generation of new plant succession on a timely basis, is a vital key to providing nutritious food for deer.





Hardwood Harvest and Chip Mills

Hardwoods of the uplands and bottomlands, especially oaks, hickories, and pecans that produce nutritious, energy producing mast each fall, are critical in sustaining deer and many other wildlife species. Acorn production by oaks less than 15 - 20 years old is minimal, with highest yields produced by 40 - 100 year old trees. Historically, there has not been much economic incentive for landowners in the Post Oak Savannah to harvest hardwoods, other than clearing woods to create new pasture for cattle, providing material for railroad ties, or for firewood. Recent upswing in prices for hardwood sawtimber and hardwood chips used in the production of quality paper products and particle board has prompted some landowners to sell hardwoods. Timber harvests can benefit deer and wildlife if timber harvest strategies beneficial to wildlife are incorporated into landowner's plans. But, too often long term effects are overlooked. Long term economic benefits derived from wildlife may equal or surpass quick, short term profits from timber harvests.

Reservoirs

The backbone of the Post Oak Savannah deer herd is found in the hardwood bottomlands of the its rivers and major creek systems. As of 1990, an estimated 63 percent of Texas' bottomland hardwood habitat has been lost due to reservoir development, timber clearing, and other land use changes. In the Post Oak Savannah, approximately 150,000 acres has been lost for terrestrial wildlife due to major reservoir construction. The Texas Department of Water Resources (now part of the Texas Natural Resources Conservation Commission) has identified an additional 17 reservoirs in water plans for surface water development in the Post

Oak Savannah through the year 2030 to satisfy projected water supply needs. If constructed, these additional reservoirs will significantly impact deer populations. A total of 471,000 acres would be inundated, including 148,000 acres of bottomland hardwoods. A 1990 TPWD evaluation of the 44 total proposed reservoirs in Texas determined that seven of the top 10 with the highest habitat quality rating for bottomland hardwoods are located in the Post Oak Savannah.

Lignite Coal Mining

Since 1968, seven lignite coal mining operations have been developed in nine counties in the upper two-thirds of the Post Oak Savannah to supply fuel for electric power generating plants. In order to mine these near-surface coal beds, the forest and woody cover is stripped from the surface. After lignite is extracted, environmental regulations require the land to be recontoured and revegetated. However, it is not required that it be restored to the native trees and grasses which were stripped off and on which deer depend. Almost 100,000 acres are controlled by these mines and roughly 50 percent of this acreage is now in non-native pastureland. Many landowners prefer this type of pasture for cattle, but it significantly reduces the land's carrying capacity for deer.

Predation

Coyotes and **bobcats** are natural predators of deer in the Post Oak Savannah. In earlier times, mountain lions and red wolves preyed on deer also, doing their part to ensure that "wildness" remained in the deer. As deer populations increase, these



predators usually cull the weaker fawns. Coyote and bobcat populations increase and decrease according to the fluctuation and abundance of their primary prey species, rabbits and mice - not deer.

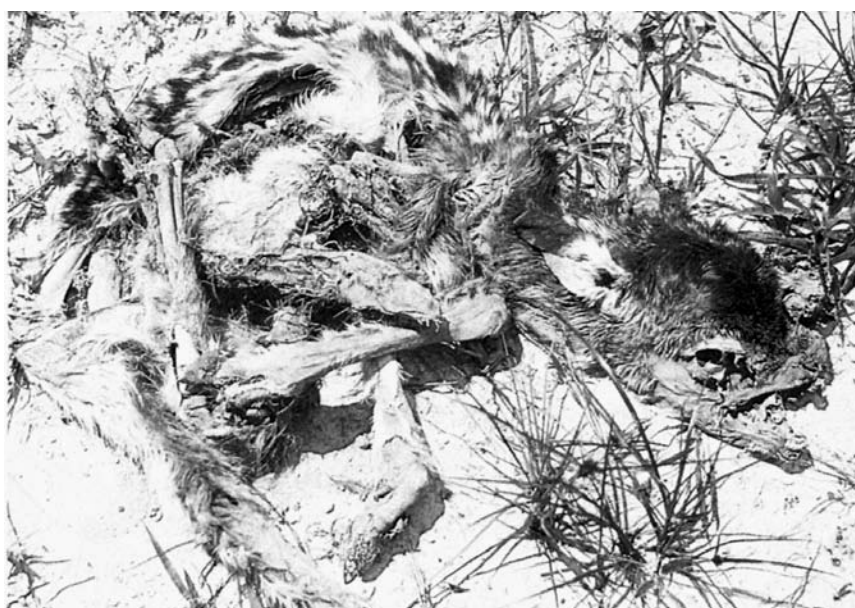
Studies conducted during the mid 1970s in the mid and lower Post Oak Savannah indicated fawn losses of 25 - 40 percent due to coyote predation. All of these studies were in areas where deer density was high, 5 - 10 acres per deer. The studies in Lavaca and Gonzales County also showed predation was higher during dry summers when vegetation was sparse, enabling coyotes to readily spot fawns. During wet summers when vegetation was more dense, coyote predation was lower as fawns were less visible and there were more prey species such as rabbits and mice, taking some pressure off of fawns. In good habitat with healthy does producing an abundance of healthy fawns, coyote or bobcat predation has not been a problem. Habitat is the key.

Mounds of the red imported fire ant became noticeable in southern Post Oak counties during the early 1970s. These ants steadily moved northward and were present in counties along the Red River by the late 1980s. The native fire ant is not as prolific or tenacious as the South American variety. It has been found that in Texas over 50 percent of all imported fire ant colonies are polygynous, having multiple fertile queens present in every colony, and may occur at densities of over 500 mounds per acre. Individual young fawns that lay down near a mound are sometimes attacked and stung. The swarming ants concentrate on sources of moisture such as the anus, mouth, nostrils, and eyes which can result in blindness and death.

These ants' impact on the overall deer population is unknown. On sandy upland sites of the Post Oak Savannah, imported fire ants are generally at lower densities than in the tighter, shallow claypan and bottomland soils. Deer herds maintained in good habitat conditions have consistently higher fawn survival regardless of the presence of imported fire ants. Fawns born in May and early June, when relative ground temperatures are cooler and before ant activity increases with summer temperatures, are thought to be subject to less risk due to imported fire ants. **As with coyotes and bobcats, good habitat management, producing healthy, mobile fawns will more than offset most losses.**

Diseases and Parasites

Some of the most common diseases and parasites known to affect deer in the Post Oak Savannah are **hemorrhagic disease (bluetongue), theileriasis, salmonella, ticks, and liver flukes.** Malnutrition is the primary factor that





makes deer susceptible to disease. Incidence of these diseases increases where populations have exceeded carrying capacity, placing deer in a condition of continued nutritional stress and close proximity. Diseases are transmitted easier, and are kept "active" when deer populations are high. When disease occurs, it is compounded by an overcrowded situation. A deer herd on a high nutrition diet is normally not significantly affected by most diseases. Unfortunately, a high level of nutrition is seldom achieved in the Post Oak Savannah.

Hemorrhagic disease antibodies were present in 77 percent of 100 deer sampled in the Post Oak Savannah in 1991, compared to 84 percent statewide. Fawn loss could occur after weaning in late summer or early fall if they are not immune from hemorrhagic disease after being protected by maternal antibodies. However, actual deer loss to hemorrhagic disease is not known. Local deer populations may consist primarily of immune survivors of the virus transmitted by tiny biting flies called biting midges or sand gnats.

Losses of fawns, due to infection with salmonella, were estimated to have been as high as 30 percent during studies conducted in the late 1960s and early 1970s. Salmonella losses appear to be higher in bottomlands during wet springs and summers. White-tailed deer are not involved with the transmission of **brucellosis** to livestock. They can be carriers of **leptospirosis** and **anaplasmosis**, but deer are not considered significant in the transmission of these infections to livestock.



Feral Hogs

Feral hogs include domestic swine gone wild, European boars, and crosses between the two, and have been in the Post Oak Savannah since the early 1800s. These "exotics" were introduced by early settlers and have adapted well to this area. In 1991, TPWD estimated a minimum of one million feral hogs in Texas. Feral hog distribution in Texas is very similar to that of white-tailed deer, occupying most of the same habitat. Partly due to hunters releasing them in new areas for hunting and more "improved" pastures and crops, feral hogs have increased dramatically during the past decade. The tell-tale signs of rooted up pastures are common in upland sites as well as in marshes, creeks, and river bottoms.



Feral hogs compete directly with deer, turkey, squirrels, and other wildlife for acorns, fruit, mushrooms, and other native foods, especially in hardwood bottomlands. They are opportunistic in their feeding habits, eating anything from corn to carrion. Deer avoid feral hogs, usually leaving an area when one or more hogs appear. The feral hog is the most prolific large animal in the United States. A sow may have two litters a year, averaging four to six pigs per litter. These pigs normally begin breeding at 8 - 10 months of age.

Research is currently in progress on the impact feral hogs have on deer and other wildlife as far as diseases are concerned. Swine brucellosis and pseudorabies, reproductive diseases known to be carried by some feral hogs, are the two primary diseases being investigated. Feral hogs are probably here to stay, but populations can be controlled by intensive trapping and shooting of hogs during January and February. Some biologists consider recent declines in Post Oak Savannah deer populations to be partially due to the increase in feral hogs competition with deer for food and space.

Urbanization and Land Fragmentation

Between 1950 and 1990, the human population in Texas increased 120 percent. Six percent, 1,086,000, of the state's population currently resides in the 32 counties comprising the Post Oak Savannah ecoregion. By 2020, the population is expected to increase 30 - 40 percent! Human demands have had both positive and negative effects on deer during the past forty years.

The ever increasing demand on the area's natural resources for food, water,

housing, energy, and recreational needs has steadily consumed and degraded habitat.

Urban sprawl and economic incentive has resulted in wooded tracts of several thousand acres being divided up into numerous smaller tracts. Presently, in the rural Post Oak Savannah, less than 15 percent of land ownerships are more than 200 acres, representing 30 - 55 percent of the total rural acreage. The remaining numerous smaller land tracts make deer management difficult. The average home range of Post Oak Savannah deer is 400 - 700 acres and deer may have to travel over five or more landownerships in order to fulfill their life needs. Numerous, diverse demands are made upon these smaller tracts of land by landowners and often the results are not compatible to support a healthy deer population. Hunting pressure is also usually heaviest on these smaller tracts.

Analysis

The history of the Post Oak Savannah deer herd is a typical scenario of other deer herds in Texas and across the United States. Without seasons or bag limits, and with few game wardens to enforce game laws, deer were exploited and virtually eliminated from the area by early settlers. After deer were restocked in the 1950s, populations increased to the point where antlerless harvest was necessary in some instances to keep the herd within carrying capacity for the range. After protecting the female and spike buck segment of the herd for years in order to build up the deer population and protect "first-year antlered bucks", landowners and hunters were usually reluctant to harvest sufficient numbers of antlerless deer or spike bucks to prevent degradation of the habitat and antler genetics.





During the early 1960s, changes in land-use patterns began to significantly affect deer habitat so that it could not support high numbers of deer as it had in the past. Landowners began to increase the number of cattle on their land as they cleared more woods and planted coastal bermuda. An increasing number of large tracts of land were broken up into smaller tracts during this period. More landowners were putting more demands on the land. The already heavy hunting pressure was intensified by the increased number of small tracts of land.

A significant ad valorem tax break (one-fifth real estate value) on open-space land (agricultural exemption) was passed by the Texas legislature in 1979. Stocking requirements for an agricultural exemption are often in excess of what the land should carry for range recovery and conservation. This is especially true for landowners with 300 acres or less. This essentially forces landowners to clear land and stock more livestock than is best for the long-term health of the land in order to qualify for the exemption. The Texas legislature unknowingly placed an additional burden on the land and created a negative impact on white-tailed habitat.

Many landowners and hunters do not understand the limits or potential of the land, especially regarding the production of deer. Most do not know how many deer there should be for a healthy deer population over the long term. Well-intentioned ranchers often apply cattle management to their deer herds. The ensuing results produces frustration and often anger at TPWD biologists for not proposing better hunting regulations.

It is surprising that deer survive as well as they do. The inherent survival instinct of deer in degraded habitat, which results in poor fawn survival, could be compared to the tragic human situation of third world countries as in Nigeria, Rwanda, and Somalia. Despite overpopulation in a

degraded countryside that cannot possibly feed them, babies continue to be born, only to die of starvation and disease.

In retrospect, during the past 30 - 40 years, county, state and federal agencies that are entrusted with the well being of Texas' wildlife and natural resources and work with the residents of the Post Oak Savannah, have sometimes made mistakes. Most mistakes had only short term effects on the deer herd or the public's confidence in the agency. Some decisions, however, have had a tremendous impact and continue to affect public attitudes, agency philosophies, and deer herds - hard lessons have been learned.

Land clearings, often funded by federal cost-share monies, often eliminated productive wildlife habitat. Replanting these clearings with Coastal Bermuda and other non-native grasses (also partially funded by federal monies) has benefited cattle, but has reduced wildlife habitat by thousands of acres. Further degradation and loss of irreplaceable bottomland hardwood habitat has occurred from reservoir construction, land clearings, timber operations, and other causes.

The Future

What does the future look like for white-tailed deer in the Post Oak Savannah? The landowner ultimately has the final say. Regardless of hunting regulations, landowners control what happens on their land, the number and kind of deer harvested, and especially how they manage the woods and pastures that produce deer. Future prospects look both bad and good.



On the negative side, many past and ongoing land management decisions will result in reduced deer populations. Much of the habitat for deer has been permanently lost or seriously degraded. Probably less than five percent of the total acreage in the Post Oak Savannah is under integrated management for deer and cattle, or other land-use practices favorable to deer and other wildlife. The remaining deer habitat in the Post Oak Savannah is constantly being stressed by the actions of ranchers, farmers, urban and rural developers, water and reservoir developments, strip-mining operations, past and on-going introduction of non-native plants and animals, and a growing human population.



There will likely continue to be areas of quality habitat that can support healthy deer herds at about 10 acres per deer, but there will be fewer and fewer of these quality areas because of fragmentation of habitat. The overall result is a perhaps slow, but definitely steady decline in total number and overall health of deer in the Post Oak Savannah. Unless the aesthetic, biological, and economic value of deer and their habitat is considered, and the

management techniques and knowledge necessary to conserve and maintain this habitat is practiced by land managers, declines in deer numbers and their health will occur.

On the positive side, there are a number of possible actions to conserve and improve deer herds in the Post Oak Savannah. In the past 10 years, there has been an increase in landowner and sportsmen interest in actively managing their land or hunting lease for deer. They are willing to alter traditional livestock and hunting operations to reach their deer management goals. They realize that hunting regulations and increased law enforcement, although a necessary component of deer management, are not the primary factors in managing deer. They realize good habitat management is the essential, determining factor. What are they now doing different?

Research on TPWD wildlife management areas and results on large and small private land tracts in the Post Oak Savannah over the years have proven that there are several management techniques that will definitely improve deer populations. There is no short cut to good management. It takes three to five years, using a combination of some or all of several techniques to produce desired results. Proven techniques are: **(1) deferred rotational grazing of native pastures by cattle; (2) exclusion of cattle from the majority of wooded areas, especially from August through January; (3) periodic late summer or winter prescribed burning of native pasture and upland woods; (4) overseeding existing coastal bermuda pastures with yuchi arrowleaf clover; (5) planting summer and winter supplemental food plots which are excluded from cattle; (6) providing free choice high protein supplemental feed (deer pellets) during the drought period usually from June through August.**





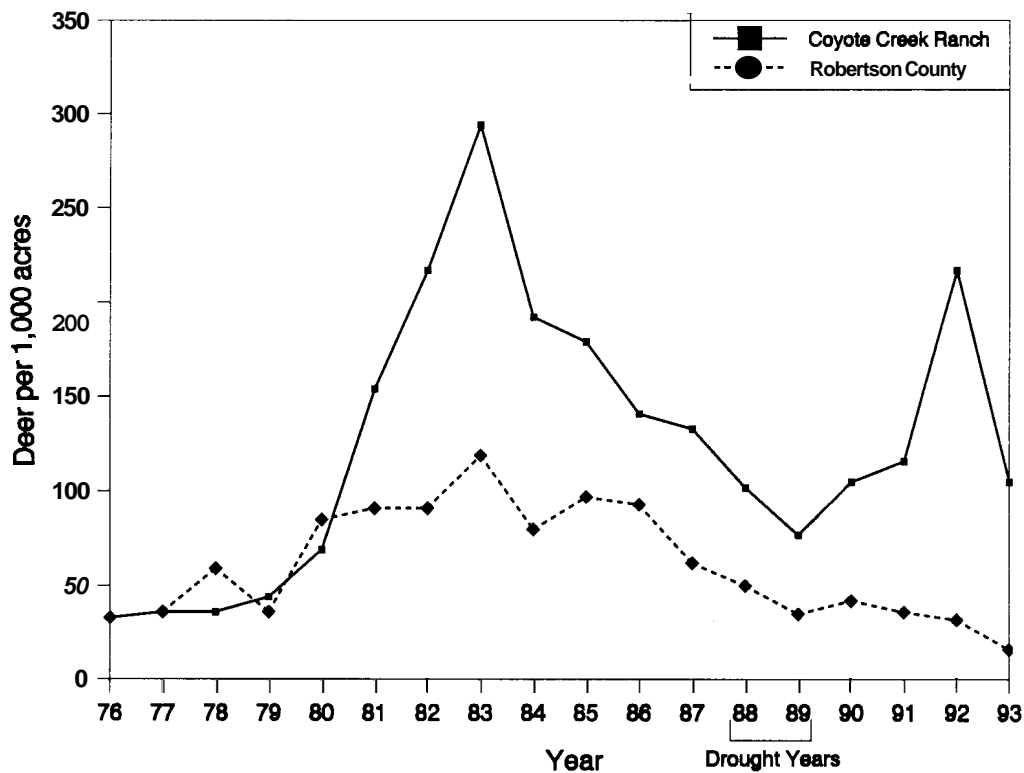
Landowners that incorporated these techniques into their overall land management operation have seen **fawn production/survival increase from 20 - 30 percent to over 90 percent**, resulting in their overall deer herd increasing from less than 3 deer/100 acres to up to 20 deer/100 acres! As long as they continued **active management**, their deer populations remained significantly higher compared to the surrounding area.

Coyote Creek Ranch (275 acres) in Robertson County and Alcoa (8,000 acres) in Milam County are just two examples of operations that have experienced positive results in recent years by actively applying some or all of the above listed management techniques. Both of these operations are located in deep sand upland sites and had a history of low fawn survival with resulting low deer populations. Close monitoring of fawn populations have documented October

fawn per doe ratios of .90 - 1.39 per doe, or 90 - 139 fawns per 100 does! Fawn crops on adjoining county acreage remained a low .30 percent (Figure 9).

With the initiation of the **Landowner Assisted Management Permit System (LAMPS) in 1993**, a conservative antlerless harvest permit issuance system is now available to landowners. This system of antlerless permit issuance is based primarily on the **amount and type of deer habitat** on a particular tract of land. This is a more realistic approach than past methods, rewarding landowners that manage for quality habitat. The emphasis on quality habitat to produce a healthy deer herd should also increase landowner's and sportsmen's awareness of the year-around needs of deer and initiate actions on their part to meet these needs.

Figure 9: Comparison of Deer Population Coyote Creek Ranch vs. Robertson County, 1976-93.





Fine-tuning of this program during the next few years should produce a system that **will fit the majority of Post Oak Savannah landowner's needs in their deer management operation.** Landowners with adequate acreage must make application for LAMPS permits through TPWD headquarters in Austin.

In 1992, the Texas legislature passed legislation that created a **wildlife management tax exemption** similar to the "ag exemption" for rural agriculture operations. Under the new legislation, a landowner that practiced several specified wildlife management practices annually, provided the land had been used primarily for agricultural purposes for at least five of the last seven years, would receive a significant tax deduction (approximately one-fifth the tax assessment the land would normally receive on the real estate market). As of Summer 1994, the Texas Attorney General had not yet ruled on the constitutionality of this legislation, causing landowners to be hesitant in taking advantage of this significant tax break for wildlife management that they conduct. A positive interpretation, or possible revision of this legislation, could prove to be the economic impetus that has been needed for landowners to significantly improve habitat in the Post Oak Savannah for the long-term. The law is on the books and some landowners are taking advantage of it. The wildlife exemption has been added to the 1994 agricultural exemption application.

A positive trend in the past 10 years has been **increased cooperation among private organizations and state and federal natural resource agencies** in landowner assistance and land management programs. This has improved **communication on the local level with the private landowner** and other land managers and users of the natural resources that affect deer herds in the Post Oak Savannah. Hundreds

of wildlife clinics, seminars, and conferences have been conducted during the past three years in area counties by these agencies in an effort to inform the land manager of latest management techniques that they can apply to their own land. Cooperation and education have proven to be the most effective and cost-efficient method to achieve the common goal of improved wildlife habitat and healthier wildlife populations. More effective education techniques are needed and bureaucratic paperwork simplified to benefit the land manager.

What can the small landowner do?

Even if he attends meetings, becomes aware of various management techniques, and has a TPWD biologist visit on his or her property and prepare a written management plan as a guide; and even if he or she begins fencing cattle from woods, conducting prescribed burning, planting summer food plots, and selective harvest of the deer, what happens when the deer goes under the fence to the neighbors? If the adjoining neighbor is also a member of the local landowner wildlife management association, he knows that an adequate number of deer are safe because the neighboring landowner has similar goals for the deer herd.

Landowner wildlife management associations, or landowner cooperatives, have proven to be an effective method of managing deer in other areas of Texas, even where the majority of land tracts are less than 200 acres. As at least 3,500 contiguous acres are needed to effectively manage a deer herd, cooperatives can be a major solution to deer management problems for landowners in the Post Oak Savannah. There are a few cooperatives in the region, with prospects for additional ones to be formed, but a **community effort is essential to make cooperatives work.** The local landowners must have the "want to" to turn things around. It can start with just a few interested landowners, but





over time thousands of acres can be involved as adjoining landowners see the positive results of this core group and become members of the cooperative.



Landowners in wildlife management associations can cooperate with the local game warden to reduce game violations. Local TPWD, Texas Agriculture Extension Service, and Soil Conservation Service biologists are available for free assistance in organizing cooperatives. These biologists can also assist landowners in focusing on local deer management problems, providing guidance in

habitat improvement, and showing them how to make deer counts, collect age, weight, and antler data, analyze data, and develop harvest strategies. The cooperative sets its' harvest quotas and habitat goals. Gate signs are now available from TPWD that designate tracts of land as being members of a local landowner wildlife management association, advertising to others that these landowners are actively involved in improving the area for deer and other wildlife.

The future of the deer herd in the Post Oak Savannah rests with the many users of the natural resources in this region. But, it is primarily the landowner, hunter, TPWD, and other natural resource agencies that share the primary responsibility and also the greatest opportunity by cooperating together to develop and maintain a healthy deer population for present and future generations. Of this group, the individual landowner must shoulder the greatest responsibility. It does take forethought, planning, and compromise. Deer and other wildlife species have often had to live on the "left overs" from various land-use activities. Sometimes it has been enough, but too many times it has been far short of what is necessary. **The future is now.**

For more information and assistance in deer management or establishing a landowner wildlife management association write:
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744
or call
1-800-792-1112



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