

Texas Hunting Leases: Statewide and Regional Summary

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Executive Summary

The selling of hunting leases by private landowners has been regulated by the Texas Parks and Wildlife Department (TPWD) since 1925. However, a comprehensive examination of leasing activity and wildlife management practices used by landowners who lease lands for hunting has never been conducted. This study had three objectives: (1) to develop procedures to regularly monitor trends and changes in characteristics of leased lands, including acreages, locations and ecological conditions; (2) to identify the types of activities, leasing costs and intensity of hunting and other recreational activities occurring on leased lands; and (3) to identify conservation and wildlife management practices used by landowners and others who sell hunting leases.

When landowners and others, such as operators, purchase a license, they complete an application form providing current mailing address information. The TPWD compiles this information on a computer tape. The 1988-89 tape was obtained for this study. The list had addresses of 12,373 license purchasers. A two-page mark-sense questionnaire was mailed during late January, 1990 to each name on the list. Sixty percent (n=7,399) responded to the survey.

Study results are reported for the state and for each of ten ecological regions. They indicated several general characteristics of lease operations. Most leasing operations were not managed as businesses. A large majority of the leases were: (1) arranged informally; (2) influenced by factors other than profit or income generation; (3) limited to hunters who reside in Texas; and (4) based primarily on, although not limited to, hunting white-tailed deer.

Specific findings of the study included:

1. The Edwards Plateau had the most landowner-managed hunting operations.

2. The median operating expense was \$200 state-wide.
3. Less than one-half of all operators obtained written lease agreements and about one-fourth bought liability insurance.
4. Few operators provided services and facilities, except in the Trans Pecos and Edwards Plateau regions.
5. The median number of leased acres was 500, with the smallest parcels of leased land in the Post Oak Savannah region and the largest parcels in the Trans Pecos region.
6. The median lease income was \$1,100 (total reported lease-income was \$33,331,805).
7. Nine out of every ten operators also used their land for agriculture (particularly for grazing livestock in the Trans Pecos, Edwards Plateau and South Texas Plains; for crop production in the High Plains; and timber production in the Piney-Woods).
8. The most prevalent vegetation on leased lands was brushland, followed by grassland.
9. The most popular management technique was feeding wildlife, yet only 47 percent of the operators engaged in this practice.

While these findings may increase our understanding about hunting leases, they underestimate much of the economic activity associated with leasing. Past studies of hunters suggest that the sale of hunting leases produces three to five times the amount reported by landowners and others in this survey. These studies, however, were based on leasing costs reported by hunters. Hunters often include expenses for providing many of the facilities and other accouterments, which are not provided by landowners, with their cost of purchasing a lease.

Acknowledgements

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Introduction

Texas has one of the most extensive lease hunting systems in the nation. Although the regulation of the selling of hunting leases to private land began in 1925, a statewide comprehensive examination has never been conducted of these preserves or of the wildlife management practices used by purchasers of leasing licenses. Consequently, data have been heretofore unavailable to answer such basic questions as:

What are the characteristics of those who purchase hunting lease licenses?

What are the ecological characteristics of lands leased for hunting?

What are the predominant resource practices on lands leased for hunting?

What habitat management practices are conducted to sustain wildlife on leased lands?

What are the wildlife-related recreational activities that are conducted on leased lands?

Need for the Study

The current study is important for several economic, demographic and ecological reasons. In 1988, the Texas Parks and Wildlife Department sold more than 12,000 licenses to private landowners and operators (i.e., persons and groups who have a legal arrangement with a landowner to use a parcel of land for particular purposes).

Licensees sold an estimated \$100 million in hunting leases. As a result of this leasing activity, the annual value of Texas wildlife, particularly white-tailed deer and other game species, on lands leased for hunting has been estimated to vary between 100 and 300 million dollars (Pope et al. 1984). In addition, the recreational value of wildlife produces a multiplier effect on land values. The presence of wildlife on leased land contributes slightly more than \$4 billion to land values. However, these leasing, wildlife and land estimates are based partly on expenses reported by hunters and do not include the supply-side aspect of leasing activity in Texas. Therefore, data provided by landowners and operators on sales of hunting leases could enhance understanding about lease economics in Texas.

The growth of the Texas population, changes in its composition, and patterns of recreation and tourism increase demand for public and private hunting areas and wildlife resources, affect resource management policies, and contribute to the economies of rural communities. In the past decade, the Texas population grew an estimated 2.9 million above its 14.7 million base in 1980 (Murdock et al. 1989). Such growth increases recreational demand for land, water and other natural resources and influences how these resources are used. From 1980 to 1985, the number of individuals 16 years of age and older who hunted or fished increased 430,739, or 13 percent. By mid-decade, 31 percent of the state's population more than 16 years of age hunted and fished and spent \$4.8 million on wildlife-related activities; 70 percent participated in nonconsumptive activities such as hiking, camping, nature photography and canoeing, and spent \$1.4 million (U.S. Fish and Wildlife Service 1988).

Finally, the ability of wildlife professionals and state agencies to effectively make planning and policy decisions to manage wildlife and natural habitat is exacerbated by the state owning less than 4 percent (5.5 million acres) of its total land acreage. Licenses for the sale of hunting leases in 1989 accounted for 33,769,623 acres of private land (approximately 22 percent of the rural, nonfederally owned land in Texas) across ten different ecological regions. Although state government regulates the harvesting and breeding of game on public and private lands, it does not regulate what landowners and operators do in their leasing operations. The degree of conservation and management of wildlife and their habitats by private landowners and operators varies across the state, affecting the quality, quantity and sustainability of wildlife and habitat. An assessment of conservation and management practices could help to identify more comprehensive and effective management strategies.

Objectives

This project had the following objectives: (1) to develop procedures to regularly monitor trends and changes in characteristics of leased lands, including acreages, locations and ecological conditions; (2) to identify types of activities, leasing costs and intensity of hunting and other recreational activities occurring on leased lands; and (3) to identify conservation and wildlife management practices used by landowners and others who sell hunting leases.

This report is intended to assist several groups. Professional wildlife managers may use its findings to design new programs to conserve and sustain wildlife and habitat resources on private lands. County Extension agents and wildlife specialists may consider the findings useful for developing methods of integrating lease management strategies with other resource management strategies, including those used in agriculture and forestry, to maximize the economic values of resources. In addition, landowners and operators may want to compare how their lease operations are managed with other operations in their county, region and state. Such comparisons may aid their decision making regarding specific improvements and changes they would consider in their operations.

Methods

Survey List

The Texas Parks and Wildlife Department (TPWD) annually sells hunting lease licenses to individuals, hunting clubs, corporations and other groups. License costs vary according to the number of acres to be used for hunting leases: \$15 for less than 500 acres; \$40 for 500 to 1000 acres; and \$60 for more than 1,000 acres. Hunting clubs or cooperatives pay \$60 for a license, regardless of the number of acres to be involved in hunting. When landowners and others purchase a license, they complete an application form providing current mailing address information. The TPWD then compiles this information on a computer tape.

The 1988-89 list was obtained from the TPWD for the current project. The list contained the addresses of 12,373 purchasers of licenses. Among this group, 763 purchased from 2 to 22 licenses for multiple-lease operations. These individuals were asked to complete a questionnaire for each different parcel of land leased for hunting.

Questionnaire Design

When landowners and operators purchase leasing licenses, they are required to maintain a log of the hunting activity that occurs on the leased land during the annual hunting seasons and return the log to the TPWD. To date, no one has systematically analyzed the accounts in these logs to determine the types and intensity of hunting activities. Three reasons for this lack of analysis are the cumbersome and time-consuming task of ferreting

information from thousands of logs, the uneven quality of data recorded in the logs, and the ability of the TPWD to obtain some types of harvest data more reliably with more expeditious methods. The TPWD determined that data hunters report about their expenses and harvests were more accurate than that reported by landowners. Consequently, the TPWD decided to focus its efforts on conducting mail surveys of licensed hunters (e.g., Thomas and Adams 1982).

The questionnaire used in this project was designed with several features to facilitate data collection and analyses. It was limited to two pages to encourage licensees to complete and return it. Also, the questionnaire was formatted so that responses could be machine-read and coded for computer analysis. Sense-scan technology was selected for this purpose. Unlike data transcribed in logs, responses recorded on sense-scan forms can be quickly processed and reported. Major disadvantages associated with using this method are that limits are placed on the number and type of questions which can be asked and proper completion of the form is based on using a number 2 pencil for accurate scanning.

Questionnaire content was organized according to the following topics: (1) current status of the lease operation including number of years of operation, facilities and services provided, and operational expenses and income; (2) ecological characteristics of the lease area, including major habitat and wildlife; (3) agricultural and recreational uses of the lease area; (4) conservation management practices; and (5) types of game present and hunted.

Data Collection

After the questionnaire was developed, it was pre-tested with a sample of 25 licensees. They were contacted in November, 1989 and asked to complete the form and comment about its organization. The pretest was conducted using three methods to assess the response procedure. Interviews were conducted by telephone and face-to-face, and a small group received questionnaires by mail. The questionnaire was subsequently revised to improve its clarity.

The revised questionnaire was mailed to 12,367 licensees on January 22, 1990. It was followed on February 12 by a postcard reminder. A questionnaire was mailed again to all nonrespondents on March 5, 1990. As licensees returned questionnaires, they were eliminated from future contact efforts.

Multiple license holders were telephoned during the latter part of December, 1989 to inquire about the actual condition of their lease operations and to alert them to the study. This group was contacted again by mail on January 10, 1990 to reconfirm that they would be receiving multiple questionnaires and to provide

them with more information on how to complete the questionnaires.

After the mailing of questionnaires and the first post cards, 210 licensees contacted the principal investigators to express concern about not having received the questionnaires. Their addresses were verified and second questionnaires mailed to them. Another difficulty involved 137 undelivered questionnaires resulting from inaccurate addresses. The number of addresses was then adjusted to 12,236 to calculate the rate of response.

Overall, 60 percent (N=7,399) of the licensees participated in the survey. Among these respondents, 69 percent reported leasing their land and earning income; they represented 42 percent of the total adjusted number of licensees.

The number of surveyed licensees represented 33,769,623 acres of privately owned and managed land. Survey respondents accounted for 59 percent, or 19,804,333, of these acres. Respondents who had leased and derived income during the 1989 to 1990 season leased 15.2 million acres. Ecological regions reporting the most leased acres were the Edwards Plateau (4.7 million acres), the South Texas Plains (2.8 million acres), the Trans Pecos (2.7 million acres) and the Pineywoods (2.1 million acres). Although everyone in the survey had purchased permits, 2,275 (31 percent of the survey respondents, 19 percent overall) did not lease or derive income from leasing. This group accounted for approximately 4.6 million acres. Nonrespondents in the study accounted for 13,965,290 acres in 51 counties. The majority of these acres (77 percent) and counties were located in the Edwards Plateau, the Trans Pecos, the South Texas Plains and the Pineywoods.

Survey Nonresponse

In April, 1990 a random sample of 110 nonrespondents was contacted by telephone to estimate statistical bias in the survey. Sampling error was ± 9 percent, based on the population of nonrespondents. Five questions were asked in the brief survey. Responses were compared with those of respondents to the original survey and were tested using the chi square test. Differences between the two groups were statistically significant on all five questions.

Findings indicated that nonrespondents were less likely to have sold hunting leases this year and less likely to sell them next year. Both groups reported similar percentages of landowners. However, nonrespondents were more likely to be lease operators, outfitters and hunters than landowners. Finally, non-respondents were less likely to have derived any income from leasing.

Presentation of Findings

The survey data are presented in frequency tables for the state and its ten ecological regions. No county level data are reported, but individual county reports are

available from county Extension agents. Data from counties with fewer than 15 licensees responding to the survey were aggregated and reported in the total number of responses for their ecological regions. This was done to protect the anonymity of participants in the survey. Moreover, no data will be reported on a single lease operation. Overall, 106 counties had fewer than 15 respondents; 24 counties had no respondents.

Frequencies, medians, means and standard deviations were calculated and reported when appropriate for some data.

Findings

The findings discussed below provide a general overview of lease operations in Texas from 1989 to 1990 and do not describe lease operations in individual counties. Findings are also reported for Texas' ten ecological regions because of their variation of game and populations of hunters.

Leasing Operations

Eighty-nine percent of the licensees had active lease operations during the past hunting season. The most active regions were the Pineywoods (93 percent), Gulf Prairies (91 percent) and Edwards Plateau (91 percent). The least active region was the High Plains (71 percent).

Most of the licensees operated a hunting lease during the past hunting season as an owner (71 percent), operator (36 percent), hunter (13 percent) or outfitter (3 percent)(multiple responses were possible). Owner-managed operations were most prevalent in the Edwards Plateau (83 percent), Cross Timbers (79 percent), South Texas Plains (77 percent) and Trans Pecos (77 percent) regions. Operator-managed leases were the most prevalent in the Pineywoods (56 percent) and Blacklands (54 percent). Outfitter-managed operations were found most often in the High Plains (25 percent), while hunter-managed operations were common in the Pineywoods (43 percent).

Seventy-two percent indicated they would lease land to hunters next year, 24 percent were unsure and 2 percent said they would not. Operators (hereafter to include landowners) in the High Plains (39 percent), Rolling Plains (36 percent) and Post Oak Savannah (32 percent) expressed the most uncertainty about next year's leasing.

Operators have leased their land for an average of 14 years (median=10 years). The oldest operations were located in the Edwards Plateau (19 years) and the Trans Pecos (16 years). The youngest operations were in the High Plains (6 years) and the Rolling Hills (7 years). Although only 30 percent of the operators kept records of their operational expenses, they reported an average operating expense of \$1,650 (media=\$200). Lease operations averaging the most ex-

penses were located in the Gulf Prairies (\$30,788), South Texas Plains (\$17,688) and Pineywoods (\$15,352). Operators in the High Plains (\$590) and Blackland Prairies (\$611) reported the least expenses.

A majority of the operators kept records on the numbers (77 percent) and types (65 percent) of game harvested, except for licensees in the High Plains (43 percent). Forty-six percent obtained a written lease agreement and few operators (27 percent) purchased liability insurance. Operators in the Pineywoods (83 percent) were the most likely to require written lease agreements, those in the High Plains (20 percent) the least likely. Although operators in the Edwards Plateau outnumbered those in other regions, only one-third signed lease agreements with hunters.

Overall, most hunting leases were sold to provide additional income (68 percent) and to control trespassing (39 percent). Lease operators in the Pineywoods were the least likely (22 percent) to use leasing to produce income and the most likely (64 percent) to use it to control trespassing. Large majorities of operators sold hunting leases in the Trans Pecos (84 percent) and the Edwards Plateau (82 percent) to produce additional income. Few operators (13 percent) reported their lease operations were business enterprises, indicating that such operations were not primary sources of income and were informally managed.

Lease Services

Operators provided few services to hunters. These services included: filling game feeders (23 percent); providing game feed (20 percent); supplying maps (16 percent); furnishing guides or delivery to stands (7 percent); providing a newsletter or food service (4 percent); and processing game (3 percent). The greatest percentage of operators were most likely to fill game feeders (34 percent) and provide game feed (20 percent) in the Edwards Plateau, to provide maps in the High Plains (37 percent) and Trans Pecos (37 percent), and to furnish guides in the High Plains (42 percent) and Trans Pecos (30 percent).

Few operators also provided facility related services, which included: a cabin (38 percent); hunting blinds or utilities (30 percent); game feeders or kitchen (22 percent); bathroom or showers (20 percent); trailer hookups (22 percent); shooting range (9 percent); walk-in storage cooler (4 percent); and airplane landing strip (3 percent). Compared to other operators, a large percentage of operators in the Trans Pecos provided cabins (58 percent), bath/shower facilities (54 percent), kitchens (49 percent), utilities (44 percent), shooting ranges (20 percent) and landing strips (17 percent). Those in the Edwards Plateau region provided cabins (55 percent), utilities (47 percent) and game feeders (31 percent).

Lease Acreages and Incomes

The eighty percent of the operators who leased land to hunters residing in Texas averaged 15 hunters (median=6) per lease. Averages were highest in the Gulf Prairies (43 hunters per lease) and the Pineywoods (27 hunters per lease) regions. The High Plains had the highest median of paid hunters per lease (median=12). Thirty-seven percent of the operators allowed free access to an average of 8 hunters (median=4) per lease. Findings of past research indicate that these hunters are often relatives and friends (Thomas and Adams 1982). Operators in the Gulf Prairies region had the largest average number of such hunters (28 hunters per lease). Less than 8 percent of the operators reported that nonresident hunters paid for leases; they averaged 13 hunters per lease. Operators in the Gulf Prairies reported the highest average number (80) of out-of-state hunters (median=20).

Leased hunting land averaged 2,463 acres (median=500 acres) statewide. The average number of acres in a lease varied from 702 acres (median=300 acres) in the Post Oak Savannah to 22,205 acres (median=13,000 acres) in the Trans Pecos.

The average number of acres used to attract waterfowl was 23 acres (median=0). Operations averaged 329 acres in the Gulf Prairies and 289 acres in the Blackland Prairies regions. The average number of acres that are continuously under water is 10 acres (median=0).

Statewide, \$33,331,805 of lease income was reported by the surveyed licensees. Total income averaged \$4,564 (median=\$1,100) per lease. At least two-thirds of the operations in each region earned lease income, except for operations in the Pineywoods and High Plains regions where 52 percent and 42 percent reported no income. Average total incomes were highest in the Trans Pecos (mean=\$9,896, median=\$5,000) and the Gulf Prairies (mean=\$9,227, median=\$1,500) regions.

Operating costs were 25 percent of total lease income statewide. Operators estimated their income from the sale of hunts by the gun, number of acres in the leased parcel of land, size of groups or clubs of hunters, and type of exotic game. The average total income based on gun leases was \$4,936 (median=\$2,017); incomes were highest in Trans Pecos, Rolling Plains and Gulf Prairies and lowest in the Cross Timbers. Lease sales based on number of acres averaged \$10,120 (median=\$2,291); average incomes were highest in the Gulf Prairies and South Texas Plains and lowest in the Blackland Prairies. Lease sales based on groups averaged \$4,867 (median=\$2,000); average incomes were highest in the Trans Pecos and Gulf Prairies and lowest in the Blackland Prairies. Leases based on type of game hunted (i.e., exotics) were sold mostly in the Edwards Plateau region and averaged \$23,082 (median=\$2,700).

Habitat Use

The main kind of land leased for hunting was brushland (63 percent) followed by grassland (54 percent), improved pasture (20 percent), cultivated land (19 percent), hardwood forest (15 percent), bottomland (15 percent), pine forest (13 percent), mottes (6 percent) and desert shrub (4 percent).

Agricultural uses of leased hunting acreage were grazing (70 percent), followed by cropland (14 percent), timber (14 percent) and small grains production (14 percent). Grazing activity was most prevalent in the Trans Pecos (89 percent), Edwards Plateau (84 percent) and South Texas Plains (81 percent). High cropland use was reported only in the High Plains (60 percent). Timber production occurred primarily in the Pineywoods (79 percent), and small grain production occurred mostly in the Cross Timbers (32 percent) and High Plains (28 percent) regions. Ten percent of the operators reported that some of their acreage was idle.

The major recreational activity conducted on most leases statewide was gun hunts (80 percent). Other activities included bow hunts (21 percent), fishing (18 percent), private bird hunts (13 percent), nonhunting recreation (12 percent), trapping (7 percent) and field trials (less than 1 percent). More than 65 percent of the operations in all regions had gun hunts, except in the High Plains where only 34 percent had gun hunts. Private bird hunts were the major activity in one-half of the operations located there. Bow hunts were conducted mostly in the Pineywoods region (45 percent) and in the Blackland Prairies (34 percent) region, where a large percentage of the leases were also sold for fishing (46 percent). No single region had a sizeable percentage of its leasing operations involved in trapping, field trials and nonhunt recreation.

Feeding wildlife (47 percent) was the wildlife management technique used most on leased acres statewide, particularly in the Edwards Plateau (59 percent) and Pineywoods (51 percent) regions. Other techniques used statewide included building tanks/ponds (32 percent), controlling harvests (32 percent), planting food plots (22 percent), controlling brush (19 percent), conducting wildlife censuses (12 percent), conducting sex/age counts of wildlife (11 percent) and providing check stations, fallow plowing and high fences (3 percent each). Constructing tanks/ponds was most popular in the Rolling Plains (44 percent). Operators in the Pineywoods (49 percent) were the most likely to plant food plots. Thirty-seven percent in the Trans Pecos controlled game harvests. Less than one-third of the operators in any region practiced other management techniques.

Wildlife

Operators were asked to identify which of 16 game animals were present on their land and to indicate whether these animals were also hunted. Percentages for each type of game are: white-tailed deer (86 percent present versus

79 percent hunted); doves (64 percent versus 37 percent); quail (57 percent versus 29 percent); turkey (52 percent versus 38 percent); squirrel (45 percent versus 18 percent); predators (42 percent versus 23 percent); ducks (25 percent versus 9 percent); feral hogs (20 percent versus 16 percent); javelina (17 percent versus 12 percent); sandhill cranes (6 percent versus 1 percent); mule deer (4 percent versus 3 percent); exotic big game (4 percent versus 2 percent); pheasant (3 percent versus 3 percent); antelope (2 percent versus 1 percent) and alligators (2 percent versus 0.2 percent).

More than half the operators in all areas except the Trans Pecos (35 percent) and the High Plains (2 percent) reported the hunting of white-tailed deer. The most popular hunting areas were the Pineywoods (91 percent) and the Edwards Plateau (86 percent). Mule deer and javelina were popular in the Trans Pecos (80 percent and 49 percent, respectively); javelina and feral hogs were hunted in the South Texas Plains (41 percent each). Doves were hunted on more than one-half of the operations in the Rolling Plains (55 percent), Gulf Prairies (54 percent), South Texas Plains (53 percent) and Cross Timbers (50 percent) regions. Quaff hunting was also prevalent in the Rolling Plains (64 percent) and South Texas Plains (48 percent). The largest percentages of leases for duck and geese hunts were in the Gulf Prairies (46 percent and 41 percent, respectively). Pheasant was hunted mostly in the High Plains (75 percent), turkey in the Edwards Plateau (63 percent), Cross Timbers (56 percent) and Rolling Plains (50 percent), squirrel in the Pineywoods (63 percent) and predators in the Trans Pecos (46 percent). Other game was hunted on less than 10 percent of the operations in each of the regions.

Summary

Study results indicated several general characteristics of lease operations. Hunting lease operations should not be perceived as businesses in the same sense as ranching and farming. Few records were kept on operating expenses, perhaps because investments in facilities and services for hunters and wildlife management are small. Few operators offered alternative wildlife related recreational activities to the public. With a few exceptions among licensees, hunting leases in Texas were:

- arranged informally between licensees and hunters;
- influenced by factors other than profit or income generation;
- limited to hunters who reside in Texas; and
- based primarily on, although not limited to, hunting white-tailed deer.

It is also interesting to note that many licensees who sold leases granted free access to some hunters.

Finally, some comment is necessary about the lease income reported by operators. Most estimates of leasing activity in Texas are three to five times the amount reported by respondents to the survey. This difference may be attributable to three factors. The first reason for the conservative reporting of leasing income is related to the 40 percent nonresponse to the survey. If leasing practices among nonrespondents are similar to those who responded to the survey, an additional \$13.3 million of lease income would be expected. However, this may still underestimate leasing costs and may reflect only the cost to access land in most lease operations. The second factor may be that operators understated their incomes. This occurs because of poor recollection or concern that the government would become involved in raising their taxes. A final and the most probable factor is that most estimates are based on hunters' reported costs of leasing. Hunters are more likely to add other costs, such as those for stands, camp sites and so forth, to their leasing expense, when lease operators do not provide these facilities and services. In this study, operators reported that they did not provide many facilities and services, leaving hunters to pay for such amenities. Thus, the lease income data presented in this report should be carefully used and discussed in the context of who responded to the survey and the nature of their hunting lease operations.

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