

EFFECTS OF FEE HUNTING ON A PRIVATE LAND WILDLIFE MANAGEMENT PROGRAM

by

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ABSTRACT

An intensive multi-mode fee hunting program was installed in 1972 on 400,000 acres of land in Alabama owned by Gulf States Paper Corporation. A profit motive has resulted in the installation of an intensive wildlife management program designed to produce marketable hunting rights.

Individual management plans have been written for 28 tracts of land involving over 60,000 acres. Cutting blocks have been reduced from an average of over 1,000 acres to approximately 320 acres. Prescribed burning has been increased from once every 30 years to approximately once every 3 years except following planting. Hardwoods are preserved on small tracts, and are thinned by group selection with clearcuts at 60-100 years on larger areas. Scheduled cuts are regularly spaced throughout the entire rotation. Non-forestry habitat improvement practices are applied whenever justified. Animal population and habitat data are used to monitor effects of management.

Public reaction to fee hunting has been generally favorable. Fee hunting has several advantages. It improves wildlife management. It provides an economic basis for evaluating wildlife management practices. It provides concrete data on hunting values which can be applied to environmental impact statements.

INTRODUCTION

An estimated 80% of all hunting is done on private land in the United States (McIntire 1970). This figure is possibly conservative for the South where 91% of the land is privately owned (Moody 1969). Yet the vast bulk of money for wildlife management (exclusive of law enforcement) is utilized on public lands in most states. The primary reason for this "mismatch" is that there is simply not enough money to intensively manage wildlife on private lands. Also, many private landowners are reluctant to undertake the job without a profit incentive.

Fee hunting on a profitable basis seems to be the key to improving, or in many cases implementing, wildlife management on private lands. Moody (1969) indicated profit has caused many landowners to readjust their thinking on the merits of deer management. Glasgow and Noble (1971) stated that wildlife management should be an integral part of forest management, but this was not likely to come about until the landowner receives a monetary return from wildlife. Whittaker and Echelberger (1971), Stransky and Halls (1969) and Howard and Longhurst (1956) have stated the merits of fee hunting on private lands.

This paper describes a program of wildlife management initiated in 1972 by Gulf States Paper Corporation (GSPC). It is probably the most intensive, single landowner, fee hunting system based on a profit motive in the United States. I am indebted to Jim Haynes and Bob Mills, GSPC, and Jerry Waters, Jerry Waters and Associates, for their assistance with this paper's preparation. Faith Davidson provided typing and editorial assistance.

HISTORICAL BACKGROUND

In 1956 GSPC hired Ray Redmond as the first industrial wildlife biologist in the South (Land 1973). Under Redmond, the company's wildlife program mainly consisted of relatively intensive habitat management on five tracts of land totaling approximately 35,000 acres, extensive law enforcement, and cooperation with the Alabama Department of Conservation and Natural Resources in various projects such as deer transplanting.

Prior to 1946, no public hunting was permitted on GSPC lands. Between 1946 and 1964, free hunting was permitted although various types of free permits were used to control hunter distribution. In 1965 hunters could hunt on company lands only after

purchasing a permit for a nominal fee. This permit system was not installed with a profit motive since planned costs far exceeded expected income.

In 1972 GSPC decided to establish an outdoor recreation business with initial emphasis on hunting. The east Texas-based consulting firm of Jerry Waters and Associates was employed to assist with establishment of this business. This consulting firm conducted a feasibility study, and designed and assisted with the installation of various phases of the business including both wildlife production and marketing. This business establishment phase required over two years, and was completed on July 1, 1974. This business has a profit motive as its basic objective which is unique among major timber producers in the United States.

The hunting program is designed to attract a broad spectrum of users through its multi-mode approach. In 1973-74 hunting season, most GSPC land was open to \$12 annual permit holders. Two tracts of land were open for daily fee deer hunts. Individuals or groups could hunt on these lands for \$5-\$10 per day per hunter. Four of GSPC's best tracts were open for membership hunting. For \$200 to \$250, a hunter could purchase either a fall deer and small game membership or a spring turkey membership. Membership numbers were limited to promote quality hunting. Group memberships were offered on one tract so that a business, club or other organization could use the tract and its facilities throughout the season. Clubs, businesses or individuals could also lease land tracts for their exclusive use. Average lease price was \$2.00 per acre per year. The 10,000 acre Westervelt Reserve with its lodge facilities was used for highly exclusive hunting with emphasis placed on corporate entertainment. Daily rates varied from \$25 to \$135, depending on type of hunt and services offered.

COMPANY OBJECTIVES AND WILDLIFE MANAGEMENT POLICY

Any successful business must have products and/or services for which there is user demand. Increasing demand for hunting rights is reflected in an increase of almost one million hunters between 1965 and 1970 (U. S. Dept. of Interior 1970). A basic policy of GSPC's Forest Recreation Department (FRD) is that it must provide high quality product/services (hunting experiences) if it is to continue to function as a viable business. Thus most income is invested in production of quality hunting.

Company lands range from hardwood bottoms to upland pines. Timber stands range from pure hardwood to mixed forest to pine monocultures. Individual land parcels vary from 40 acres to well over 20,000 contiguous acres, and surrounding land-use varies from forestry, range and agriculture to residential and commercial.

FRD's policy is to manage individual tracts of land utilizing appropriate wildlife management techniques on each tract. In general, management intensity is directly related to current or projected income from each land parcel. To date three internal biologists and five consulting biologists have written plans for Westervelt Reserve, four preserves, and 23 leased tracts, covering a total of over 60,000 acres. Plans are continually being written for additional tracts, and will be revised approximately every five years.

FRD finances entire management efforts on Westervelt and preserves being used for memberships and daily fee hunts. Wildlife management on leased tracts is cost-shared with lessees. FRD pays expenses for deputy patrols, biological data collection, timber management alterations, access, and prescribed burning. Provisions such as clearings, food plots, extra deputy patrols and gate construction are cost-shared. This gives lessees a monetary stake in the quality of future hunting. A lessee may not install a management provision unless it is approved by a FRD biologist.

HABITAT MANAGEMENT

Compartment Size and Harvest Schedule

Compartments (cutting blocks) vary in size from a few hundred acres to almost 2000 acres. Cutting schedules for each working circle (assemblage of compartments in a geographic area) do not preclude cutting of adjacent compartments within a few years. This combination has resulted in clearcuts of up to 3000 contiguous acres.

This situation has been improved considerably on lands for which wildlife management plans have been written. Compartment size has been reduced to generally no more than 320 acres unless the shape is long and narrow, or irregular. Cuts on a given tract are scheduled throughout the entire rotation so as to avoid simultaneous cutting of adjacent compartments. This results in timber age diversity and a greatly increased edge effect.

Figures 1 and 2 illustrate effects of these changes. Figure 1 indicates former compartment designation on Piney Woods Preserve. Compartments were large ($\bar{x} > 1300$ acres), and the cutting schedule was such that over 90% of the preserve was seedtree cut in a nine year period, creating very little edge effect or diversity. Figure 2 illustrates present compartment designation and harvest schedule. It will take 20 or 30 years to change the present stand, but when finished, edge effect (as measured by compartment boundaries) will be increased approximately 50%, and all age classes of timber will be present throughout the preserve at all times.

At present, these compartment size and cut scheduling changes only involve preserves and leased lands. However, GSPC is currently determining the feasibility of making similar changes on all its lands.

Prescribed Burning

Prior to 1973, prescribed burning was used as a forestry management tool on GSPC lands, and it was scheduled once during each 30 year rotation, just prior to the 22-year intermediate thinning. Most FRD wildlife management plans call for prescribed burning at approximately three year intervals except the initial 8 to 10 years after tree planting. The three year interval appears to be a reasonable compromise to meet the needs of deer, turkey and quail. Burning schedules are flexible enough however, to meet the specific needs of specific game species when desired. Burns are also scheduled whenever possible to include at least one burn per year on each managed tract containing three or more compartments.

Hardwood Management

Hardwood bottoms provide some of the best hunting in the South, and special efforts have been made to obtain maximum hunting values from these highly productive wildlife areas. Group selection is used as a thinning mechanism to promote quality tree growth followed by clearcuts of mature timber. Rotation age will generally be 80 to 100 years. Oaks will be the favored species whenever feasible.

Most upland tracts owned by GSPC are predominantly pine with small hardwood bottoms. The wildlife value of these bottoms often exceeds their timber value. The bottoms are generally too small to be managed the same as for large hardwood stands, but they play an important part in the ecology of many wildlife species. If the bottoms are at least three chains wide and one-half mile long, they are put on an 80 year rotation with appropriate thinnings. Smaller bottoms are removed from the timber rotation and preserved for wildlife use entirely.

Prior to 1973, small bottoms were generally clearcut along with adjacent pine and then aerial sprayed to remove hardwoods and promote pine growth. The former upland goal was a pure pine monoculture on most tracts. The present goal is an upland forest with reasonable (approximately 320 acres) pine monocultures of various ages traversed with hardwood stream bottoms whenever possible.

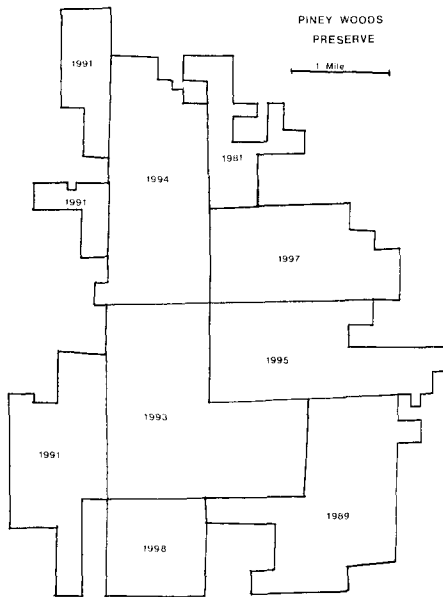


Figure 1. Piney Woods map indicating original compartment boundaries and years of scheduled cuts.

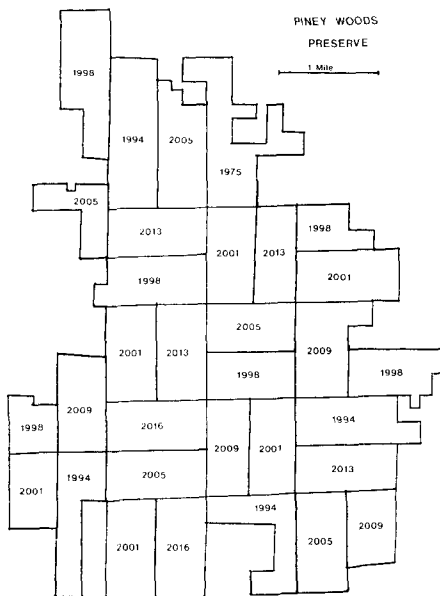


Figure 2. Piney Woods map indicating revised compartment boundaries and years of scheduled cuts.

Non-Forestry Habitat Manipulation

Although forestry-oriented habitat manipulation is emphasized, non-forestry habitat items such as forest clearings, food planting, discing and mowing are also used. Before being recommended, they must be justified on an economic and biological basis. Thus, these practices are normally used only on high value areas unless a lessee cost-shares expenses.

Forest openings are mostly a result of logging roads and loading sites. If additional openings are required, they are generally outlined during regular clearcutting operations. Openings are maintained by burning and mowing, and many logging roads are allowed to revert to low vegetation rather than being bladed periodically. Discing is utilized on a few areas where quail and turkey are emphasized.

Food plantings are extremely difficult to justify either biologically or economically in a program where deer are emphasized, yet certain lessees use this cost-share option liberally. On Westervelt Reserve and the major preserves, food plots are used to concentrate game for more efficient harvest. The current program emphasizes permanent plantings such as honeysuckle and bahia grass instead of annuals.

Artificial feeding, particularly for turkey, was utilized rather extensively in past programs to hold turkeys (or attract them) on an area just prior to hunting season. This practice is being reduced on GSPC lands.

Law Enforcement

A significant effort is directed toward law enforcement. Each year FRD employs deputy wardens to enforce both state and FRD regulations on Gulf States' lands. Fifteen extra men were used in this capacity during 1973-74. In addition, many regular FRD field personnel are state-authorized deputies. The law enforcement facet of the wildlife management program has a valuable public relations role as well as that of enforcement of regulations.

BIOLOGICAL DATA COLLECTION AND ANALYSIS

Biological data collection and analyses have a high priority in the wildlife management program, and are directed towards the evaluation of wildlife production and utilization. A set of guidelines for data collection and analyses was prepared by five consulting biologists and a forester familiar with both habitat and population manipulation techniques throughout much of the nation in general and the South in particular.

Habitat data collection principally involves browse and mast evaluations on areas for which management plans have been written. These late-summer surveys utilize both permanent transects and random paths depending on management intensity for a given tract.

Population data collection for deer involves visual surveys to determine herd composition and fawn production. Harvest data include magnitude of kill; sex and age composition of kill; and physical and physiological condition of herd in relation to carrying capacity utilizing physical measurements, reproductive performance and abomasum parasite counts.

All deer harvest data are stored on computer punch cards. Long-range plans call for eventually (5-10 years) modelling certain deer herds using data concerning deer population and harvest; hunter density, distribution, and hunting style; hunting regulations; timber stand condition; and weather. This information could be programmed to permit computer simulation of effects of various combinations of treatments involved in the program.

Turkey population data collection involves turkey flock and track observations to determine flock composition and numbers as well as poult production. Turkey harvest data include kill magnitude and adult/juvenile ratios.

In addition, data are collected concerning hunter distribution and density. Data collection from other game species generally only involves magnitude of harvest.

COOPERATION WITH THE STATE WILDLIFE AGENCY

Establishing good relationships between FRD and the Alabama Department of Conservation and Natural Resources is essential. FRD is selling hunting rights and experiences that involve a state-owned product (wildlife). Alabama sets hunting regulations under which FRD must operate.

GSPC has cooperated with the wildlife department in many ways, particularly with the deer transplant program, various research projects and law enforcement. Current intensification of wildlife management on company lands can also be considered a form of cooperation since it will result in improved wildlife populations on a significant amount of Alabama land. FRD has offered Westervelt Reserve as a turkey transplant source since it has a high population. This area has also been informally offered to test effects of either-sex fall turkey hunting.

FRD has requested that certain areas be given more liberalized deer harvest regulations. Biological data supporting these requests have been presented to state biologists.

PUBLIC REACTION TO FEE HUNTING

Corporate landowners in the South are concerned over effects of fee hunting on public relations. Many fear hunting fees will provoke fires and also will be detrimental to relations with private wood producers. Some companies believe the public is willing to pay a small permit fee, but that many people would actively object to paying for more exclusive hunting rights (leases, etc.), or would object to having others pay for such hunting rights which would result in less land open to permit or free hunters.

Gulf States has found this problem to be minimal. There have only been a few instances of open resentment over the current fee system. Fire problems have been minor. In one county, letters to newspapers expressed resentment, and public meetings were held to organize against the program. This adverse public reaction diminished considerably after the first year and is expected to be insignificant within a few years.

Urban hunters appear to support the program although there is also the possibility they are largely apathetic and willing to go along with almost any program. Surprisingly, most lessees are rural clubs. These rural hunters are willing to pay an average of \$2.00 per acre for GSPC land when adjacent lands are priced at \$0.50 per acre or less. They place a high value on exclusive hunting privileges and express great concern about urban hunters. They feel the protection of their lease by FRD deputies and the wildlife management program is worth the increased price.

Most leases are renewed annually, indicating user satisfaction. In one county all GSPC land is set aside for leases. Residents of this county express appreciation for the lease program since it stopped the heavy influx of urban hunters. Corporations who have used Westervelt Reserve are extremely satisfied since a hunting lodge combined with high quality hunts is an ideal atmosphere to entertain business associates.

WILDLIFE-FORESTRY MANAGEMENT TRADE-OFFS

Stransky (1973) pointed out the data deficiency concerning values of hunting in the South compared to timber values. He noted such data would enable the construction of a model to predict effects of "trade-offs between wood and game at various levels of timber management and game habitat management intensities."

GSPC is currently evaluating effects of various forestry harvest techniques on the overall forestry program. Some variables being considered include rotation age, compartment size, compartment geometry and various aspects of hardwood harvest techniques. FRD is developing a model showing effects of these variables on hunting values. The model is somewhat crude in that certain nonlinear relationships required some qualitative value assessments due to a lack of data, but the model should be improved considerably within a few years.

As such models become available, wildlife managers will be able to discuss effects of various timber management practices on wildlife in monetary terms rather than qualitative generalizations. This is necessary to get proper consideration for wildlife when dealing with forestry corporations which are concerned primarily with profit. Moody (1969), discussing International Paper Company's deer program, stated, "Thus far, we have found that concessions to deer can be made in timber management practices, but it remains to be seen how far these concessions can go. Again, it's a matter of economics and control."

VALUE ASSESSMENTS FOR ENVIRONMENTAL IMPACT STUDIES

Environmental Impact Studies often show opposing views between engineers and natural resource managers. Engineers' arguments are represented by monetary projections while conservationists' views are qualitative value assessments. Howard and Longhurst (1956), regarding hunting, have stated, "It seems desirable or even necessary to create an economic interpretation for some of these intangible, "uneconomic" values of the wildlife heritage. Since the unspoiled outdoors is vanishing rapidly, a yardstick to measure the social, moral, esthetic, economic, and other values inextricably bound up with this sport is badly needed."

Fee hunting provides an economic yardstick to values of an important segment of an environmental impact statement. Based on GSPC's hunting business, it can be demonstrated hunting rights alone are currently worth \$1.00 - \$3.00 per acre per year on upland sites and \$2.50 - \$6.00 per acre per year on bottomland hardwood sites. On certain lands, hunting values exceed timber values, and at least two tracts should bring \$10.00 - \$20.00 per acre within ten years for hunting and related services alone. When these hunting values are combined with timber, watershed, endangered species, fisheries and other pertinent values, the result can be impressive. Thus fee hunting can be beneficial in properly evaluating construction nonconstruction conflicts.

SUMMARY AND CONCLUSIONS

Fee hunting is a feasible means to increase wildlife management on private lands without vast increases in wildlife agencies' budgets. A well-designed hunting business must have a strong production phase to remain competitive, and with increasing competition, this quality hunting production will become even more important. A hunting business can be designed to minimize adverse public reaction, and such a business can actually improve a landowner's public image.

A fee hunting business must justify its production of quality hunting on an economic basis. Thus fee hunting can provide data concerning economic validity of wildlife management techniques, degree to which nonhunting land use practices can be manipulated to favor wildlife, and value of hunting rights for use in determining economic feasibilities of construction projects.

There is little doubt fee hunting will increase in the South, and it may eventually be important on many public lands (Glasgow and Noble 1971). Some states, such as Texas and Kansas, are heavily involved in providing assistance to private landowners, but most provide only minimal services. State agencies have the power to impede wildlife management by private landowners through over-restrictive hunting regulations which can make managing for optimum hunting conditions economically unfeasible. The wildlife profession should provide leadership to maximize both hunter and landowner benefits involved in fee hunting. Consultants or privately employed biologists can provide wildlife production assistance while public agencies can provide regulatory support.

Wildlife management intensity is generally far greater on public than on private lands due to efforts of fee-collecting public agencies. The major drawback to intensifying management of private lands is a lack of funds. Fee hunting is a feasible means to overcome this monetary limitation on certain private lands. This system will

probably result in reduced hunting opportunities due to increased costs, but hunting quality will probably be increased.

Landowners must make their holdings produce income. If hunting does not produce this income, some other land-use will be employed. Current alternatives to profit-oriented hunting businesses include commercial development, tame grass pasture conversion, "clean" farming and extensive forest monocultures.

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A PLAN OF FOREST WILDLIFE HABITAT EVALUATION AND ITS USE BY INTERNATIONAL PAPER COMPANY

by

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ABSTRACT

A habitat evaluation system which employs a systematic plot survey of each stand or unit of a tract to be evaluated is described. Scores are recorded by individual species and stand and/or tract values reflecting habitat quality are quantified. From these values and other observed information, a precise management plan can be written.

INTRODUCTION

There exists a need for a field scoring system to evaluate the quality of wildlife habitat for management purposes. This need is particularly acute on industrial forest land where profound habitat changes are caused by silvicultural practices such as harvest cutting, site preparation, prescribed burning, etc. Although the quality and quantity of wildlife food can be estimated by detailed studies, other factors of habitat such as escape cover, feeding conditions, nesting cover, etc., are

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