Landowner Involvement and Attitudes: Fee Access Wildlife and Fisheries Recreation

FWRC

Forest and Wildlife Research Center
Research Bulletin
Mississippi State University

The Forest and Wildlife Research Center at Mississippi State University was established by the Mississippi Legislature with the passage of the Renewable Natural Resources Research Act of 1994. The mission of the Center is to conduct research and technical assistance programs relevant to the efficient management and utilization of the forest, wildlife, and fisheries of the state and region, and the protection and enhancement of the natural environment associated with these resources. FWRC scientists conduct research in laboratories and forests administered by the University and cooperating agencies and industries throughout the country. Research results are made available to potential users through the University's educational program and through Center publications such as this, which are directed as appropriate to forest landowners and managers, manufacturers and users of forest products, leaders of government and industry, the scientific community, and the general public. Dr. George M. Hopper is director of the Forest and Wildlife Research Center.

Authors

Ian A. Munn and Stephen C. Grado are professors in the department of forestry. Their primary research interest is natural resource economics. Anwar Hussain is an assistant research professor in the department of forestry. John D. Byrd is an extension/research professor in the department of plant and soil sciences. Jeanne C. Jones is an associate professor in the department of wildlife and fisheries. Her primary research interest is habitat evaluation and management. W. Daryl Jones is an outreach/research scientist in the department of wildlife and fisheries. Emily K. Loden is a research associate in the department of forestry. James E. Miller is a retired outreach/research scientist in the department of wildlife and fisheries. Ben C. West is the national outreach coordinator for the Berryman Institute East.

To Order Copies

Copies of this and other Forest and Wildlife Research Center publications are available from:

Publications Office
Forest and Wildlife Research Center
Box 9680
Mississippi State, MS 39762-9680

Please indicate author(s), title, and publication number if known.
Publications are also available at the web site at www.fwrc.msstate.edu.

Citation

Munn, I.A., A. Hussain, J.D. Byrd, S.C. Grado, J.C. Jones, W.D. Jones, E.K. Loden, J.E. Miller, B.C. West. 2007. Landowner involvement and attitudes: Fee access wildlife and fisheries recreation. Forest and Wildlife Research Center, Research Bulletin FO332, Mississippi State University. 30 pp.

Research Bulletin FO332

FOREST AND WILDLIFE RESEARCH CENTER

Mississippi State University

Landowner involvement and attitudes: Fee access wildlife and fisheries recreation

by
Ian A. Munn
Anwar Hussain
John D. Byrd
Stephen C. Grado
Jeanne C. Jones
W. Daryl Jones
Emily K. Loden
James E. Miller
Ben C. West

Forest and Wildlife Research Center
Mississippi State University

TABLE OF CONTENTS

INTRODUCTION

Changing demographics and household earnings in the United States over the past three decades have led to important changes in the spatial distribution of the human population as well as land use patterns (Brown et al. 2005). One effect of these changes has been the rise in overall demand for recreational areas and access. Because United States public lands are inadequate to meet national recreational demands, interest in recreation on private lands has increased (Teasley et al. 1997). Consequently, since private nonindustrial landowners in the U.S. own about 70% of the land, they are naturally at the center of a public debate about recreational access on private lands (Teasley et al. 1997). While the problem is complex and raises many concerns, a consensus is emerging that rural economies and individual nonindustrial private (NIP) landowners may be able to take advantage of the rising demand for recreational opportunities on both public and private lands. Development analysts also find it encouraging that recreational activities may contribute to local economies with lower environmental costs than those imposed by traditional economic activities such as forest- and agriculture-based industries (Bergstrom et al. 1990).

To assess how Mississippi landowners can supplement their incomes by engaging in fee-access recreational enterprises, scientists initiated a study to determine:

1. differences between landowners that do and do not participate in fee-access recreation with respect to demographic characteristics, landholdings, attitudes and concerns about fee-access hunting, and participation in conservation programs;
2. property characteristics of fee-access fish and wildlife recreation endeavors in Mississippi, specifically location, size, land use type (e.g., agriculture, forestry, water) and wildlife habitat management practices;
3. types and amounts of fee-access fish and wildlife recreation provided by Mississippi NIP landowners, specifically types of activities (e.g., hunting, fishing, wildlife viewing), species featured, and amenities provided;
4. business characteristics of fee-access fish and wildlife recreation endeavors in Mississippi in terms of level of landowner involvement (e.g., passive management - little to no landowner involvement, moderate management - some habitat management and part-time/seasonal landowner participation, and intensive management - intensive habitat management, a major contribution by landowners of time and effort), payment methods, number of clientele, revenues and costs, number of employees, and facilities available; and
5. factors influencing the amount of revenue landowners receive, including, but not limited to, landowner involvement, amenities provided, habitat quality, and land-use composition.

The findings will assist in identifying ways for landowners to maximize their returns from fee-access recreation, enhance knowledge of current fee-access fish and wildlife recreation activities and NIP landowner attitudes concerning fee-access fish and wildlife recreation, and divulge the potential for NIP landowners to engage in this type of business venture. Additionally, the results will assist university educators, extension personnel, industry, public agencies, and other interested parties target underserved landowners (Measells et al. 2005) and address perceived or real problems, challenges, and knowledge gaps among Mississippi's NIP landowners regarding fee-access fish and wildlife recreation.

METHODS

In October 2003, two thousand questionnaires were sent to a stratified random sample of NIP landowners owning a minimum of 100 acres in Mississippi. Landowners were identified and randomly selected from property tax records of 70 of 82 Mississippi counties. Twelve counties were not included because landowner addresses could not be obtained. The 100 acres minimum was set in light of previous research that indicated few landowners with less than 100 rural acres participated in wildlife enterprises (Jones et al. 2001) and to eliminate urban and suburban properties within the property tax records. Landowners were mailed a reminder postcard one week after mailing the first questionnaire. A second questionnaire was mailed four weeks later. The sample was stratified into four ownership classes: 1) 100-199 acres, 2) 200-499 acres, 3) 500-999 acres, and 4) >1,000 acres, with 600, 600, 320, and 480 mail-outs, respectively.

The stratification and sample size scheme were based on the current population sizes of the various ownership classes and the percent of landowners participating in fee-hunting by ownership size as determined in Jones et al. (2001). Landowners in the larger ownership classes were over sampled to ensure a certain minimum number of large landowners in the final sample.

The questionnaire sought information on property characteristics, current fee hunting and recreational enterprises, investment and operating expenses, participation in habitat improvement assistance programs (e.g., Conservation Reserve Program (CRP), Wetland Reserve Program (WRP), Environmental Quality Incentives Program (EQIP), Wetland Habitat Incentives Program (WHIP), conservation easements), attitudinal information, and landowner demographic data (e.g., highest educational level, annual household income, age, ethnic background, gender).

The data generated from the survey were organized by participation category (i.e., land owners that provided recreational fee access activities and those that did not), conveyance method (i.e., how landowners conveyed recreational rights to customers such as annual and seasonal leases, brokerage agreements, and daily permits or gun fees), enterprise size (i.e., number of acres dedicated to the fee access operation), ownership size classes (i.e., < 260 acres, 260-499 acres, 500-999 acres, 1,000-1,999 acres, 2,000-4,999 acres, >5,000) and sub-state region (i.e., Southeast, Northeast, Northwest, Southwest). Relationships between variables using one of two statistical tests were examined; the Mann-Whitney test and the means test depending on the nature of the data.

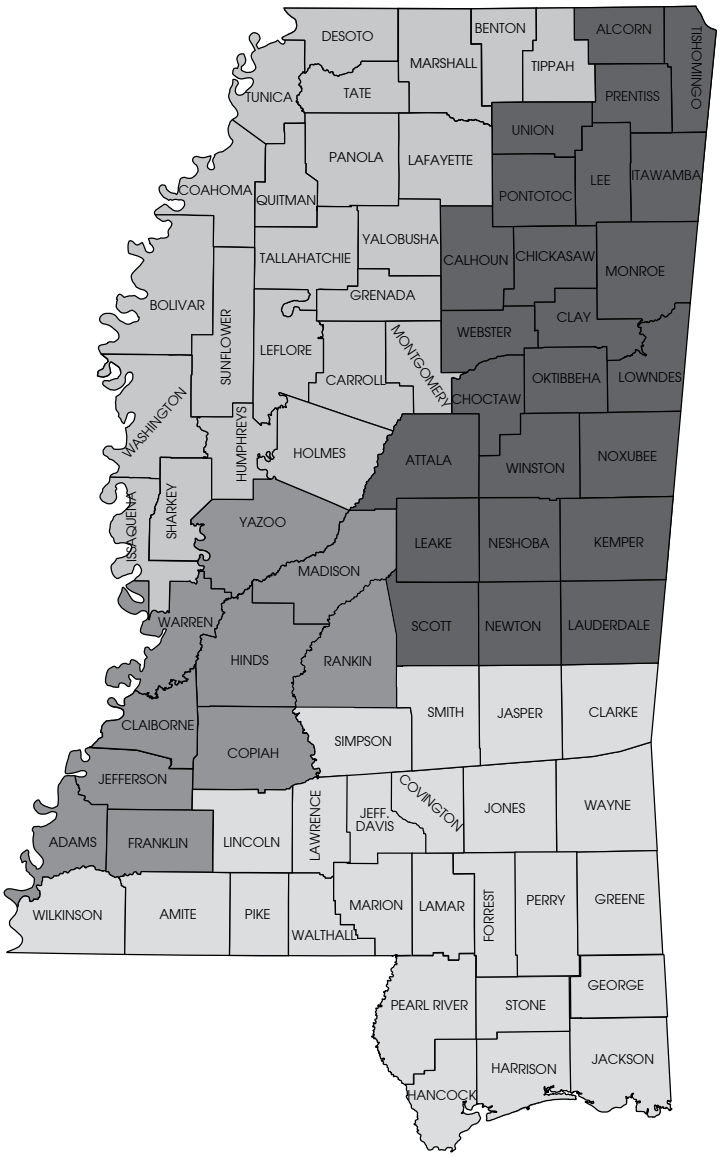


Figure I. Regions of Mississippi

RESPONSE RATE

After accounting for surveys returned due to incorrect addresses, property sales, and deceased landowners, the final sample size was 1,598. Four hundred and sixty-four usable questionnaires were returned, producing a response rate of approximately 29%. This response rate is typical for lengthy surveys such as this, which totaled 13 pages.

PROPERTY CHARACTERISTICS

Property location:

Mississippi has diverse physiographic regions and clusters of human population influencing the location and success of wildlife enterprises. To assess how wildlife enterprises were spatially distributed, participants were asked proximity of their rural property to 10 cities across the state (Biloxi/Gulfport, Greenville, Hattiesburg, Jackson, Meridian, Memphis, Mobile, New Orleans, Tupelo, Tuscaloosa). Over 33% of respondents identified Jackson as the nearest city, followed closely by Tupelo and Hattiesburg. The remaining respondents reported Meridian, Greenville, Biloxi, Memphis, Tuscaloosa, Mobile, and New Orleans, respectively. The mean distance from the property to the closest city was 51 miles.

For the purposes of this analysis, landowners were assigned to one of four Mississippi regions: Southeast (Hattiesburg, Biloxi, Mobile, New Orleans); Northeast (Tupelo, Columbus, Meridian, Tuscaloosa); Southwest (Jackson), and Northwest (Greenville, Memphis) (Figure 1). The classification scheme was based on the relative concentrations of Mississippi's population, land use patterns, and major highway networks. Based on location, the 464 landowners were distributed as follows: Southwest (Jackson area) - 156 or 34%; Northeast (Tupelo area) - 143 or 30%; Southeast (Biloxi area) - 91 or 20%, and Northwest (Greenville and Memphis area) - 74 or 16%.

Acres owned per ownership and land use allocation pattern:

Average landownership size based on all respondents was 552 acres. Of this acreage, an estimated 64% (355 acres) was forest land and 30% (165 acres) was agricultural land (Table 1). Within forest uses, a major share (20% or 113 acres) was in planted pines followed by bottomland hardwoods and mixed pine-hardwoods, each an estimated 13% of the average landownership. Among agricultural uses, row crops and pasture/fallow fields were the major uses accounting for 16% and 11% of an average landownership, respectively.

Land use patterns exhibited only limited variation across landownership size classes; however, smaller size classes, (e.g., < 260 acres; 260-499 acres; and 500-999 acres), had proportionately more forest land compared to larger size classes, (e.g., 1,000 -1,999 acres, 2,000 - 4,999 acres, and >5,000 acres), which generally had a greater portion in agriculture (Table 1). Also, planted pines represented a larger share of small ownerships while bottomland hardwoods represented a larger share of large ownerships.

At the sub-state regional level, departures from the state level average landownership and use pattern were more apparent (Table 2). Average landownership ranged from 383 acres in the Northeast to 1,068 acres in Southwest. In all regions except the Southwest, forestry was the dominant land use, accounting for over 70% of the land base (Table 2). Further, the share in row crops, pastures/fallow fields, planted pines, bottomland hardwoods and mixed pine-hardwoods in all regions except the Southwest did not differ dramatically from the overall state level land use pattern. The Southwest was unique in that: a) both agricultural (55%) and forestry (38%) uses were prominent; b) land in row crops and bottomland hardwoods accounted for the largest shares, and c) planted pines represented a relatively small

share, less than 6% compared to over 20% for all other regions.

There were major differences with regard to ownership size and use pattern when distinguished by participation type, (i.e., whether the landowner participated in fee access recreation or not) (Table 3). Landowners participating in fee access recreation, on average, owned substantially more land than those that did not: 1,386 acres versus 437 acres. The percentage of forest land was greater for participants, 76% compared to 59% for non-participants. Interestingly, there was little difference between participants and non-participants with regards to the share of land in upland, bottomland, and mixed pine-hardwoods. The difference was due to substantially larger shares of planted and natural pines on participants' lands (Table 3). Land use patterns on participants' lands did not vary substantially by ownership size class (Table 4).

Table 1. Average acreage owned by land use type by landownership size.

	Landownership size class						
	<260 (n=192)	260–499 (n=112)	500–999 (n=79)	1,000–1,999 (n-43)	2,000–4,999 (n=27)	≥5000 (n=11)	All (n=464)
	Mean acres (Standard Error)						
Total acres owned	**156 (3)**	**361 (7)**	**696 (15)**	**1,335 (44)**	**3,153 (157)**	**7,694 (733)**	**552 (17)**
Land use type	Percent of total acres by land use type						
Agriculture	**22.4**	**27.1**	**25.0**	**33.3**	**40.9**	**26.4**	**29.9**
Row crops	3.8	6.4	10.5	19.4	29.1	21.0	16.5
Pasture/fallow fields	17.3	18.8	11.5	12.6	6.1	4.6	10.9
Farm ponds, aquaculture	12.2	1.1	0.4	1.0	2.1	0.8	1.1
Orchards	0.0	0.0	0.0	0.0	0.5	0.0	0.2
Other	0.6	0.6	2.4	0.3	3.2	0.0	1.1
Forest land	**72.4**	**68.4**	**71.3**	**61.6**	**51.0**	**67.0**	**64.3**
Cutover	7.1	7.5	3.0	3.4	3.2	1.4	4.0
Planted pines	25.6	22.7	24.6	27.2	13.5	14.9	20.5
Natural pines	9.6	8.3	8.5	7.6	0.2	17.6	9.2
Upland hardwoods	5.8	4.2	9.5	4.1	3.5	2.7	4.5
Bottomland hardwoods	5.1	8.0	9.6	7.9	20.7	18.1	12.7
Mixed pine-hardwoods	18.6	17.5	16.1	11.5	7.8	12.3	13.4
Other uses	**5.1**	**4.4**	**3.7**	**5.0**	**8.1**	**6.6**	**5.8**
Water (man-made)	1.3	0.6	0.4	0.7	0.4	0.7	0.7
Water (natural)	0.6	0.6	1.0	0.4	5.3	1.5	1.8
Semi-permanent water	0.0	0.3	0.6	0.7	0.3	2.3	0.9
Power lines, ROWs	0.6	0.6	0.4	0.3	0.2	0.3	0.4
Wildlife food plots	1.3	1.4	0.7	1.1	0.7	1.3	1.1
Residential area	1.3	0.6	0.6	0.2	0.8	0.1	0.5
Others	0.0	0.6	0.1	1.6	0.3	0.4	0.5

Table 2. Average acreage owned by land use type by state region.

	Region				
	South-east (n=91)	North-east (n=143)	South-west (n=156)	North-west (n=74)	All (n=464)
	Mean acres owned (Standard Error)				
Total acres owned	**464 (109)**	**383 (45)**	**1068 (168)**	**577 (65)**	**552 (17)**
Land use type	Percent of total acres by land use type				
Agriculture	**16.8**	**25.1**	**54.7**	**22.2**	**29.9**
Row crops	1.1	8.1	44.6	10.4	16.5
Pasture/fallow fields	13.6	15.9	6.6	--	10.9
Farm ponds, aquaculture	1.9	0.5	1.8	0.5	1.1
Orchards	0.0	0.0	0.3	0.2	0.2
Other	0.0	0.5	1.5	1.9	1.1
Forest land	**75.0**	**71.3**	**38.5**	**72.8**	**64.3**
Cutover	2.4	6.0	2.6	4.7	4.0
Planted pines	25.4	30.5	5.9	21.5	20.5
Natural pines	24.6	6.5	0.5	8.7	9.2
Upland hardwoods	1.3	4.2	2.7	8.0	4.5
Bottomland hardwoods	5.0	4.2	21.0	16.8	12.7
Mixed pine-hardwoods	16.2	19.8	5.8	13.2	13.4
Other uses	**8.4**	**3.7**	**6.8**	**5.0**	**5.8**
Water (man-made)	0.9	0.8	0.6	0.5	0.7
Water (natural)	5.4	0.8	1.5	0.9	1.8
Semi-permanent water	0.4	0.3	2.1	0.5	0.9
Power lines, ROWs	0.4	0.5	0.2	0.3	0.4
Wildlife food plots	0.9	0.5	1.5	1.2	1.1
Residential area	0.4	0.5	0.3	0.9	0.5
Others	0.0	0.3	0.7	0.9	0.5

Table 3. Average acreage owned by land use type by participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-participants (n=389)	Participants (n=75)
	Mean (Standard Error)		
Total acres owned	**552 (17)**	**437 (23)**	**1,386 (226)**
Land use type	Percent of total acres by land use type		
Agriculture	**29.9**	**34.8**	**18.8**
Row crops	16.5	18.1	13.0
Pasture/fallow fields	10.9	13.3	5.4
Farm ponds, aquaculture	1.1	1.6	0.1
Orchards	0.2	0.2	0.1
Other	1.1	1.6	0.1
Forest land	**64.3**	**59.3**	**75.8**
Cutover	4.0	4.6	2.7
Planted pines	20.5	17.6	27.0
Natural pines	9.2	5.9	16.7
Upland hardwoods	4.5	5.0	3.4
Bottomland hardwoods	12.7	13.0	12.2
Mixed pine-hardwoods	13.4	13.3	13.9
Other uses	**5.8**	**5.8**	**5.5**
Water (man-made)	0.7	0.7	0.4
Water (natural)	1.8	1.1	3.5
Semi-permanent water	0.9	1.1	0.1
Power lines, ROWs	0.4	0.5	0.3
Wildlife food plots	1.1	1.1	0.7
Residential area	0.5	0.7	0.2
Others	0.5	0.7	0.2

Table 4. Average acreage owned by land use type by landownership size for landowners who participated in fee-hunting enterprises.

	Landownership size (acres)						
	<260	260–499	500–999	1,000–1,999	2,000–4,999	≥5000	All (n=75)
	Mean (Standard Error)						
Total acres owned	**141 (12)**	**341 (13)**	**640 (29)**	**1,116 (68)**	**3,270 (226)**	**6,260 (702)**	**1,386 (226)**
Land use type	Percent of total acres by land use type						
Agriculture	**4.3**	**9.1**	**12.3**	**12.3**	**21.6**	**1.5**	**18.8**
Row crops	0.0	0.3	5.2	3.6	16.9	0.1	13.0
Pasture/fallow fields	3.5	8.5	6.6	8.6	4.3	1.3	5.4
Farm ponds, aquaculture	0.7	0.0	0.2	0.1	0.1	0.1	0.1
Orchards	0.0	0.0	0.0	0.0	0.4	0.0	0.1
Other	0.0	0.3	0.3	0.0	0.0	0.0	0.1
Forest land	**93.6**	**83.6**	**84.4**	**85.7**	**68.2**	**97.4**	**75.8**
Cutover	5.7	11.1	4.8	0.0	1.8	3.2	2.7
Planted pines	24.1	36.4	38.3	50.4	21.8	51.9	27.0
Natural pines	12.8	12.9	20.5	13.7	12.0	17.9	16.7
Upland hardwoods	5.0	2.9	1.6	3.3	4.3	2.4	3.4
Bottomland hardwoods	5.7	7.3	6.9	9.6	13.9	5.7	12.2
Mixed pine-hardwoods	39.7	12.6	12.7	8.6	14.4	16.2	13.9
Other uses	**2.8**	**7.3**	**3.3**	**2.2**	**10.2**	**1.1**	**5.5**
Water (man-made)	0.7	0.3	0.3	0.8	0.2	0.1	0.4
Water (natural)	0.7	0.3	0.3	0.0	8.8	0.1	3.5
Semi-permanent water	0.0	1.8	0.2	0.5	0.1	0.0	0.1
Power lines, ROWs	0.7	0.6	0.5	0.4	0.2	0.2	0.3
Wildlife food plots	0.7	2.9	1.6	0.3	0.7	0.4	0.7
Residential area	0.0	1.2	0.2	0.0	0.0	0.1	0.2
Others	0.0	0.0	0.0	0.1	0.2	0.2	0.2

LANDOWNER ENTERPRISES

Participation in wildlife enterprises:

Of the 464 landowners sampled, 75 (16%) offered fee hunting on their land, and only one (0.22%) had a fishing enterprise. Therefore, this analyses focused on landowners participating in fee hunting, rather than recreational fee access in the broader sense. On average, these landowners have engaged in some type of fee hunting on their land for about 12 years. Of the 75 that engaged in fee hunting, 57 (76%) sold annual leases, while 18 (24%) conveyed hunting rights through a variety of other methods (Table 5). Of those who conveyed hunting rights using other methods, 14 leased seasonal hunting rights with hunters allowed access for only specific hunting seasons. Two offered short-term hunts, typically daily, weekend, or week long hunts by selling daily permits, gun fees, or packaged hunts. One respondent sub-leased hunting rights to an outfitter, and one sold hunting rights on a short-term but otherwise unspecified basis. Generally, annual leases involved less effort on the part of landowners, while other conveyance methods can be very time consuming and may involve the provision of a wider range of amenities and services. Landowners who used annual leases to convey hunting rights dedicated substantially less acreage

(755 acres versus 1,501 acres) with a smaller proportion of agricultural land (10% versus 22%) than those who used other arrangements.

Reasons for selling hunting rights:

The two predominant reasons landowners sold hunting rights on their property were to provide extra revenue (67%) and control land usage (63%) (Table 6). Other reasons included enhancement of wildlife management (25%) and good stewardship (21%).

Game species targeted:

Mississippi lands support diverse game species including big game (e.g., white-tailed deer, eastern wild turkey, wild hogs), small game (e.g., rabbit, Northern bobwhite, gray and fox squirrel), and migratory birds (e.g., geese, waterfowl, mourning doves). To assess if there was a pattern to species diversity and abundance, landowners were asked to report game species found on their property as well as the game species hunters were permitted to hunt. Game species present on landowner properties included deer (95%), turkey (85%), squirrel (85%), rabbit (75%), quail (51%), and dove (46%), while species landowners most often allowed hunters to hunt were deer (90%), turkey (55%), and squirrel (47%) (Table 7). There were, however, dramatic differences between conveyance methods with respect to the species hunted. Dove (17% versus 37%), quail (10% versus 40%), and rabbit (23% versus 59%), were targeted on a significantly smaller percentage of annual leases compared to other conveyance methods.

Landowners who participate in fee-hunting most often allowed hunters to hunt white-tailed deer.

Paul T. Brown

Table 5. Average acreage dedicated to fee hunting by land use type by method landowners used to convey hunting rights.

	Conveyance Method		
	All (n=75)	Annual leases (n=57)	Other * (n=18)
	Mean (Standard Error)		
Total acres owned	**933 (85)**	**755 (76)**	**1,501 (372)**
Land use type	Percent of dedicated acres by land use type		
Agriculture	**14.6**	**10.2**	**21.5**
Row crops	9.4	3.8	18.3
Pasture/fallow fields	4.8	6.2	2.5
Farm ponds, aquaculture	0.1	0.1	0.1
Orchards	0.2	0.0	0.5
Other	0.1	0.1	0.0
Forest land	**78.7**	**81.2**	**74.7**
Cutover	3.4	4.2	2.1
Planted pines	32.0	34.7	27.9
Natural pines	14.3	9.3	22.1
Upland hardwoods	3.4	4.6	1.7
Bottomland hardwoods	10.4	11.7	8.4
Mixed pine-hardwoods	15.1	16.7	12.5
Other uses	**6.8**	**8.6**	**3.8**
Water (man-made)	0.3	0.4	0.2
Water (natural)	4.6	7.0	0.6
Semi-permanent water	0.3	0.1	0.6
Power lines, ROWs	0.3	0.4	0.2
Wildlife food plots	1.0	0.4	1.8
Residential area	0.2	0.1	0.3
Others	0.2	0.3	0.1

*includes seasonal leases, gun fees, daily permits, package hunts, and brokerage leases.

Table 6. Reasons landowners engaged in fee-hunting enterprises.

Reason	% of respondents (Standard Error)
Extra revenue	67 (6)
Habitat Improvement	20 (5)
Protecting Environment	12 (4)
Primary Source of Income	1 (1)
Stewardship on the property	21 (5)
Enhancement of wildlife management	25 (5)
To control who is using land	63 (5)
Economic diversification for agricultural/ forestry operations	9 (3)
Reduce crop or tree damage through animal harvest	7 (3)
Other	14 (4)

Table 7. Percentage of landowners reporting huntable quantities of various game species, by conveyance method.

		Conveyance Method		
		All (n=75)	Annual leases (n=57)	Other* (n=18)
Species	**Present % (Standard Error)**	**Hunted % (Standard Error)**		
Deer	95 (3)	90 (4)	88 (5)	97 (3)
Dove	46 (6)	22 (5)	17 (5)	37 (11)
Quail	51 (6)	18 (5)	10 (4)	40 (13)
Squirrel	85 (4)	47 (6)	43 (7)	59 (11)
Turkey	85 (5)	55 (6)	57 (7)	48 (13)
Waterfowl	30 (5)	13 (3)	12 (4)	16 (7)
Rabbit	75 (5)	32 (6)	23 (6)	59 (12)
Wild hog	24 (5)	14 (3)	13 (4)	17 (8)
Other	2 (2)	1 (1)	2 (2)	0 (0)

*Includes seasonal leases, gun fees, daily permits, package hunts and brokerage leases.

BUSINESS CHARACTERISTICS OF FEE-ACCESS FISH AND WILDLIFE RECREATION ENDEAVORS

Size of fee hunting enterprises:

Statewide, the area dedicated to fee hunting enterprises averaged 933 acres per ownership (Table 5), or 67% of the average ownership for landowners engaged in fee hunting. This average, however, masked many differences across ownership size classes, enterprise size classes, regions, and conveyance method. By ownership size class, average acres dedicated to fee-hunting enterprises varied from 137 acres in the < 260 acre ownership class to 4,181 acres in the > 5,000 acre ownership class (Table 8); however, only the 2,000 – 4,999 acre landownership size category had appreciable deviations from the average land use pattern. Agriculture and natural water bodies in this ownership size class contributed much larger shares to the acreage dedicated to fee-hunting compared to all other size categories. This distinction also held true when examined by size of enterprise dedicated to fee hunting (Table 9). Viewed regionally, several major differences were noteworthy. Enterprise sizes were larger in the southern part of the state than in the northern. Average enterprise sizes in the Southeast (1,237 acres) and Southwest (1,112 acres) were over 1,100 acres compared to less than 900 acres for the Northeast (729 acres) and Northwest (896 acres) (Table 10). There were also notable differences in land use patterns between regions. For example, enter-

prises in the Southwest were dominated by agricultural land accounting for 54% of the area leased compared to less than 12% for the other regions. The percentage of enterprise lands in mixed pine-hardwood stands ranged dramatically across regions, from less than 2% in the Southwest to 25% in the Northeast. Bottomland hardwoods represented a much larger share in western regions (approximately 16%) than in eastern regions (4%). Other regional variations were evident in the acreage in planted pines, natural pines, and natural water bodies.

Amenities and services:

Most landowners did not provide amenities or services in addition to hunting rights regardless of conveyance method. Fifty-four percent of landowners who leased hunting rights on an annual basis did not provide amenities or services and neither did 58% of landowners who conveyed hunting rights in other ways (Table 11). However, the suite of amenities and services provided by landowners engaged in fee-hunting differed substantially between landowners in these two conveyance categories. Essentially, landowners leasing annual hunting rights provided no amenities with the exception of dedicating acreage for food plots to be maintained by the hunters (42%). Some landowners who conveyed hunting rights in other ways, however, provided and maintained food plots (30%), provided areas for food plots to be maintained by hunters (21%), provided lodging (17%), and pumped water (17%). Other amenities offered included guides, on-site transportation, food and beverages, blinds and stands, dogs and/or kennels, and sporting clays.

Investment in wildlife habitat improvement:

In general, few landowners invested in wildlife management practices on lands dedicated to their fee hunting enterprise; however, practices most frequently implemented included mowing (17%), pest species management (16%), timber thinning and harvesting (16%), disking (14%), beaver pond management (13%), food plot establishment and maintenance (11%), and imposing harvest regulations on white tailed deer (11%) (Table 12). Also, substantially larger percentages of hunters implemented wildlife management practices on fee hunting lands than did the landowner themselves. Wildlife food plots (47%), disking (37%), mowing (31%), imposing harvest regulations on white-tailed deer (26%) and salt/mineral licks (25%) were practices most frequently implemented by hunters.

Development of customer base:

Landowners essentially relied on two sources to connect with interested hunters: word of mouth (63%) and family and friends (54%). Newspaper advertisements were a distant third (7%) (Table 13). Only 2% of landowners engaged in fee-hunting used the Internet despite its widespread use in everyday life.

Costs and revenues:

Costs and revenues reported by respondents engaged in fee hunting were analyzed in a variety of ways: as a group, by conveyance method (Table 14), by sub-state region (Table 15), by ownership size category (Table 16) and enterprise size category (Table 17). Costs averaged $2,677 per landowner with manager compensation, personal expenses, and professional fees representing the majority of this total. Differences between conveyance methods were substantial. Landowners leasing hunting rights on an annual basis spent on average $2,141 with personal expenses ($634) and professional fees ($414) being two of the largest expense categories. Landowners conveying hunting rights in other ways averaged $4,380 in costs with manager compensation ($2,192) and guest accommodations ($609) accounting for more than 50% of the total. Major differences were also noted between regions. In general, expenditures were much greater in the western part of the state, averaging $2,482 in the Southwest and $5,394 in the Northwest compared to $530 in the Southeast and $411 in the Northeast. In the western regions, expenditures covered a wide array of categories, while in the eastern regions expenditures were essentially limited to liability insurance and professional fees. Expenditures were proportionately much greater in the larger size classes (2,000 acres – 4,999 and > 5,000 acres) by both ownership size class and lease size class.

Gross revenues averaged $6,008 per landowner but, as with costs, varied considerably by conveyance

method, region, and size class. Gross revenues for annual leases ($4,150) averaged less than half of gross revenues for other conveyance methods ($11,909). Similar to expenditures, gross revenues were substantially greater in the western regions ($6,837 for the Southwest and $8,999 for the Northwest) than the eastern regions ($5,058 for the Southeast and $2,241 for the Northeast). Although in general gross revenues increased with both ownership and lease size, on a per acre basis, there were no distinct trends.

Net revenues per dedicated acre:

Net revenue per acre dedicated to the fee hunting enterprise averaged $3.51 with notable differences by type of conveyance and region. When landowners used conveyance methods other than annual leases, net revenues per acre were 53% greater. On a regional basis, net returns per acre were, on average, at least double in the western portion of the state [Southwest ($6.57/acre) and Northwest ($4.29/acre) regions] compared to the eastern portion [Northeast ($2.25)and Southeast ($1.79) regions].

Table 8. Average acreage dedicated to fee hunting enterprises by land use type according to landownership size.

	Landownership size (acres)						
	<260	260–499	500–999	1,000–1,999	2,000–4,999	≥5000	All (n=75)
	Mean (Standard Error)						
Total dedicated areas	**137 (14)**	**279 (22)**	**501 (57)**	**747 (99)**	**2,930 (310)**	**4,181 (1,345)**	**933 (85)**
Land use type	**Percent of dedicated areas by land use type**						
Agriculture	**5.1**	**8.2**	**11.6**	**12.3**	**24.7**	**1.0**	**14.6**
Row crops	0.0	0.0	1.0	6.6	19.4	0.0	9.4
Pasture/fallow fields	4.4	7.5	9.8	5.8	4.8	0.9	4.8
Farm ponds, aquaculture	0.7	0.0	0.4	0.0	0.1	0.0	0.1
Orchards	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Other	0.0	0.4	0.4	0.0	0.0	0.0	0.1
Forest land	**90.5**	**89.2**	**84.6**	**85.9**	**63.2**	**96.8**	**78.7**
Cutover	5.8	13.6	3.8	2.0	2.0	2.2	3.4
Planted pines	0.0	37.6	44.5	43.6	23.1	39.2	32.0
Natural pines	13.1	14.7	15.4	18.5	2.7	34.0	14.3
Upland hardwoods	0.0	3.2	2.0	1.9	4.9	2.8	3.4
Bottomland hardwoods	0.0	6.8	6.0	11.0	15.9	3.9	10.4
Mixed pine-hardwoods	72.3	13.6	13.0	9.1	14.6	14.7	15.1
Other uses	**4.4**	**2.5**	**3.8**	**1.7**	**12.1**	**2.2**	**6.8**
Water (man-made)	0.0	0.4	0.4	0.5	0.2	0.0	0.3
Water (natural)	0.7	0.0	0.6	0.1	10.0	0.4	4.6
Semi-permanent water	0.0	0.0	0.2	0.3	0.5	0.0	0.3
Power lines, ROWs	1.5	0.7	0.6	0.3	0.2	0.2	0.3
Wildlife food plots	1.5	0.4	1.8	0.4	0.8	1.4	1.0
Residential area	0.0	0.7	0.2	0.0	0.2	0.0	0.2
Others	0.0	0.0	0.0	0.0	0.3	0.2	0.2

Table 9. Average acreage dedicated to fee hunting enterprises by land use type according to enterprise size category.

	Enterprise Size (Acres)						
	< 260	260 - 499	500 - 999	1000 - 1999	2000 - 4999	≥ 5000	All (n=75)
	Mean (Standard Error)						
Total Dedicated Acres	141 (12)	341 (13)	640 (29)	1116 (73)	3270 (230)	6160 (860)	933 (85)
Land Use Type	**Percent of Dedicated Acres by Land Use Type**						
Agriculture	**4.1**	**9.0**	**12.3**	**12.3**	**21.6**	**1.5**	**14.6**
Row Crops	0.0	0.2	5.2	3.6	16.9	0.1	9.4
Pasture/Fallow Fields	3.5	8.5	6.6	8.6	4.2	1.3	4.8
Farm Ponds, Aquaculture	0.7	0.1	0.2	0.1	0.1	0.1	0.1
Orchards	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Other	0.0	0.2	0.3	0.0	0.0	0.0	0.1
Forest Land	**93.2**	**83.6**	**84.3**	**85.6**	**68.2**	**97.4**	**78.7**
Cutover	5.5	11.3	4.8	0.0	1.8	3.2	3.4
Planted Pines	24.1	36.4	38.2	50.4	21.8	51.9	32.0
Natural Pines	12.7	13.0	20.5	13.7	12.0	17.9	14.3
Upland Hardwoods	5.3	2.9	1.5	3.3	4.3	2.4	3.4
Bottomland Hardwoods	6.0	7.4	6.8	9.6	13.9	5.7	10.4
Mixed Pine-Hardwoods	39.6	12.6	12.6	8.6	14.4	16.2	15.1
Other Uses	**2.7**	**7.4**	**3.3**	**2.1**	**10.2**	**1.1**	**6.8**
Water (Man-Made)	0.4	0.4	0.4	0.8	0.2	0.1	0.3
Water (Natural)	0.7	0.4	0.4	0.0	8.8	0.1	4.6
Semi-Permanent Water	0.0	1.8	0.2	0.5	0.1	0.0	0.3
Power Lines, Right-of-Ways	0.7	0.7	0.5	0.4	0.1	0.2	0.3
Wildlife Food Plots	0.7	2.8	1.6	0.3	0.7	0.4	1.0
Residential Area	0.1	1.1	0.2	0.0	0.0	0.1	0.2
Residential Area	0.1	0.1	0.0	0.1	0.2	0.2	0.2

Agriculture and natural water bodies in the 2,000-4,999 acre ownership size class contributed much larger shares to the acreage dedicated to fee-hunting compared to all other size categories.

Table 10. Average acreage dedicated to fee hunting enterprises by land use type, according to state region.

	Region				
	Southeast (n=13)	Northeast (n=23)	Southwest (n=29)	Northwest (n=10)	All (n=75)
	Mean (Standard Error)				
Total Dedicated Acres	1237 (405)	729 (269)	1112 (422)	896 (206)	933 (85)
Land Use Type	Percent of Dedicated Acres by Land Use Type				
Agriculture	**2.1**	**11.1**	**53.7**	**9.5**	**14.6**
Row crops	2.0	2.3	51.5	3.5	9.4
Pasture/Fallow Fields	2.0	8.5	0.7	5.7	4.8
Farm Ponds, Aquaculture	0.0	0.1	0.1	0.2	0.1
Orchards	0.0	0.0	1.3	0.0	0.2
Other	0.0	0.1	0.0	0.1	0.1
Forest Land	**78.2**	**87.0**	**44.2**	**87.1**	**78.7**
Cutover	0.6	4.1	3.4	4.6	3.4
Planted Pines	34.0	45.3	19.5	27.7	32.0
Natural Pines	27.5	6.0	0.4	16.3	14.3
Upland Hardwoods	0.2	2.9	4.0	5.7	3.4
Bottomland Hardwoods	4.3	3.7	15.2	16.5	10.4
Mixed Pine-Hardwoods	11.6	25.1	1.6	16.2	15.1
Other Uses	**19.7**	**1.8**	**2.2**	**3.5**	**6.8**
Water (Man-Made)	0.3	0.3	0.0	0.3	0.3
Water (Natural)	17.9	0.1	0.9	0.4	4.6
Semi-Permanent Water	0.1	0.1	0.1	0.7	0.3
Power Lines, Right-of-Ways	0.2	0.4	0.4	0.3	0.3
Wildlife Food Plots	1.1	0.7	0.4	1.2	1.0
Residential Area	0.1	0.1	0.1	0.3	0.2
Others	0.0	0.1	0.4	0.1	0.2

Average enterprise sizes in the Southeast (1,237 acres) and Southwest (1,112 acres) were over 1,100 acres compared to less than 900 acres for the Northeast (729 acres) and Northwest (896 acres).

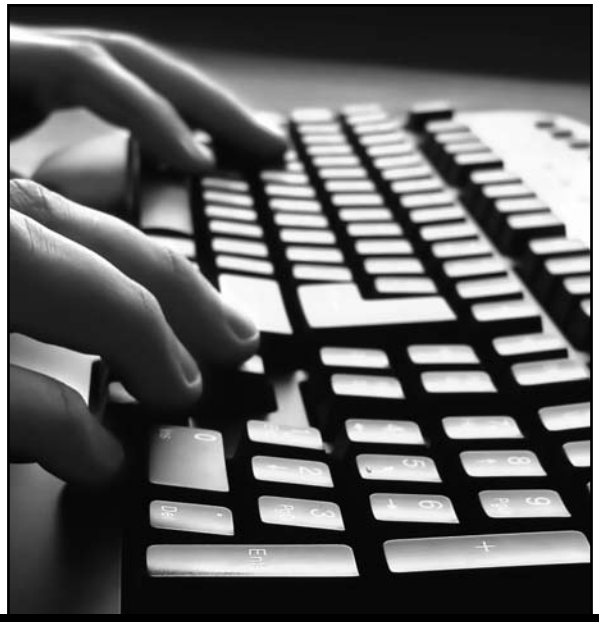
Table 11. Percent of landowners participating in fee-hunting enterprises that provide services/ amenities in addition to hunting rights, according to conveyance method (n=75).

	Conveyance Methods		
	All (n=75)	Annual Leases (n=57)	*Other (n=18)
Service or Amenity Provided	Mean Percent (Standard Error)		
Lodging	7.5 (2.4)	4.3 (2.4)	16.5 (7.2)
Guides	3.2 (1.8)	0.0 (0.0)	12.1 (6.5)
Food Plots Maintained by Landowner	12.6 (3.4)	6.4 (2.7)	29.9 (10.1)
Food Plots Maintained by Hunters	36.6 (6.0)	42.2 (7.0)	20.8 (8.8)
Ammunition	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Transportation	1.1 (1.1)	0.0 (0.0)	4.3 (4.3)
Food and Beverage	2.0 (1.4)	0.0 (0.0)	7.8 (5.4)
Blinds/Stands	9.9 (3.9)	7.1 (4.4)	17.8 (8.8)
Dogs and Kennels	2.0 (1.4)	0.0 (0.0)	7.8 (5.4)
Horses	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Pump Water	4.3 (2.0)	0.0 (0.0)	16.5 (7.2)
Sporting Clays	2.0 (1.4)	0.0 (0.0)	7.8 (5.4)
Other	0.0 (0.0)	1.2 (1.2)	0.0 (0.0)
None	55.2 (10.5)	54.2 (13.4)	57.9 (11.6)

*Includes seasonal leases, gun fees, daily permits, package hunts and brokerage leases.

Table 12. Frequency (%) of various wildlife management practices implemented by landowners versus hunters (n=75).

Wildlife Management Practice	Land-owners	Hunters
	Percent (Standard Error)	
Wildlife Habitat Management Practices		
Mowing (Not for Roadside Maintenance or CRP Land)	17 (4)	31 (6)
Disking	14 (4)	37 (6)
Prescribed Burning for Wildlife Purposes	11 (4)	4 (3)
Herbicides for wildlife purposes	7 (3)	5 (3)
Timber Thinning/Harvesting for Wildlife Purposes	16 (4)	4 (3)
Establishment of Wildlife Food Sources		
Wildlife Food Plot Establishment/Maintenance	11 (4)	47 (6)
Salt and/or Mineral Lick Establishment/Maintenance	6 (2)	25 (6)
Unharvested Crops Left in Agricultural Fields for Wildlife	7 (3)	5 (3)
Tree and/or Shrub Planting	11 (4)	3 (3)
Supplemental Feeding (e.g., Feeders)	1 (1)	18 (5)
Water and Moist Soil Management		
Winter Flooding (e.g., Pumping or Catching Rainfall/Runoff)	7 (3)	4 (3)
Waterfowl Food Crop Plantings	3 (2)	3 (3)
Moist Soil Vegetation Manipulation Disking/Mowing)	7 (3)	4 (3)
Beaver Pond Management (e.g., Draining and/or Planting)	13 (4)	4 (3)
Wildlife Population Management		
Predator Control	7 (3)	6 (3)
Pest Species Management	16 (4)	8 (4)
Harvest Regulations on White-Tailed Deer (e.g., Antler Restrictions, Doe Harvests)	11 (3)	26 (6)



Only 2% of landowners engaged in fee-hunting used the Internet despite its widespread use in everyday life.

Table 13. Percent of landowners engaged in fee-hunting enterprises utilizing various communication venues to develop their customer base (n=75).

Source of Customer Base Development	Percent (Standard Error)
Word of Mouth	63 (6)
Family and Friends	54 (6)
Church Affiliation	1 (1)
Newspapers	7 (3)
Magazines	1 (1)
Professional Journals	0 (0)
Personal Letter to Clients	0 (0)
Outdoor Catalogs	0 (0)
Internet Web sites	2 (2)
Road signs	1 (9)
Real Estate Brokers	0 (0)
Bulletin at Local Hunting Stores	0 (0)
Customer Referrals	1 (1)
Other	7 (3)

Table 14. Average revenues and costs associated with fee hunting enterprises, by conveyance method.

	Conveyance Method		
	All Methods (n=75)	Annual Leases (n=57)	*Other (n=18)
	Mean (Standard Error)		
Percent of Ownership in Fee-Hunting	79 (3)	80 (4)	78 (7)
Total Revenue $	6008 (842)	4150 (674)	11909 (3700)
Revenue/Dedicated Acre $	6.50 (1.43)	5.17 (0.56)	10.73 (5.70)
Total Variable Cost $	2677 (782)	2141 (919)	4380 (2232)
Manager Compensation	537 (341)	16 (12)	2192 (1400)
Consultant Fees	116 (71)	121 (87)	97 (99)
Professional Fees	327 (240)	414 (315)	49 (49)
Liability Insurance	154 (52)	121 (87)	255 (121)
Employee Compensation	23 (23)	31 (31)	0 (0)
Personal Expenses	511 (464)	634 (612)	122 (120)
Guest Accommodations	146 (118)	0 (0)	609 (479)
Guest Food or Beverages	23 (23)	0 (0)	97 (96)
Purchase of Released Game	350 (350)	460 (460)	0 (0)
Advertising/Marketing	9 (6)	4 (4)	24 (24)
Equipment Maintenance and Repair	155 (73)	86 (37)	372 (285)
Petroleum Products	99 (36)	63 (29)	214 (125)
Contract Services	12 (12)	0 (0)	49 (48)
Ammunition	4 (3)	5 (4)	0 (0)
Seed	83 (34)	82 (40)	88 (72)
Fertilizer/Lime	95 (38)	91 (4)	105 (57)
Miscellaneous Supplies	35 (27)	13 (11)	107 (105)
Net Revenue $	3331 (789)	2008 (775)	7529 (2341)
Net Revenue/Dedicated Acre $	3.51 (0.73)	3.12 (0.93)	4.76 (0.97)

*Includes seasonal leases, gun fees, daily permits, package hunts and brokerage leases.

Table 15. Average revenues and costs associated with fee hunting enterprises, within state region.

	Within Sub-State Region				
	Southeast (n=13))	Northeast (n=23)	Southwest (n=29)	Northwest (n=10)	All (n=75)
	Mean (Standard Error)				
Percent of Ownership in Fee-Hunting	86 (7)	77 (7)	67 (11)	81 (5)	79 (3)
Total Revenue $	5058 (2087)	2241 (819)	6837 (2893)	8999 (2458)	6008 (342)
Revenue/Dedicated Acre $	3.69 (0.82)	2.78 (0.25)	7.51 (1.60)	10.24 (3.43)	6.50 (1.43)
Total Variable Cost $	530 (285)	411 (245)	2482 (1304)	5394 (2014)	2677 (782)
Manager Compensation	46 (45)	0 (0)	476 (460)	1177 (842)	537 (341)
Consultant Fees	180 (156)	84 (76)	0 (0)	146 (145)	116 (71)
Professional Fees	0 (0)	39 (38)	0 (0)	788 (597)	327 (240)
Liability Insurance	223	101 (77)	367 (227)	96 (57)	154 (52)
Employee Compensation	0 (0)	0 (0)	0 (0)	58 (58)	23 (23)
Personal Expenses	65	0 (0)	238 (230)	1177 (1163)	511 (464)
Guest Accommodations	0 (0)	0 (0)	238 (230)	292 (291)	146 (118)
Guest Food or Beverages	0 (0)	0 (0)	190 (194)	0 (0)	23 (23)
Released Game	0 (0)	0 (0)	0 (0)	876 (872)	350 (350)
Advertising/Marketing	16 (16)	0 (0)	48 (46)	0 (0)	9 (6)
Equipment Maintenance and Repair	0 (0)	55 (50)	95 (92)	317 (177)	155 (73)
Petroleum Products	0 (0)	52 (50)	219 (182)	143 (66)	99 (36)
Contact Services	0 (0)	0 (0)	0 (0)	29 (29)	12 (12)
Ammunition	0 (0)	0 (0)	24 (23)	1 (1)	4 (3)
Seed	0 (0)	23 (17)	343 (218)	86 (50)	83 (34)
Fertilizer/Lime	0 (0)	58 (40)	29 (28)	185 (87)	95 (38)
Miscellaneous Supplies	0 (0)	0 (0)	217 (201)	22 (21)	35 (27)
Net Revenue $	4528 (2140)	1830 (647)	4354 (1971)	3605 (1971)	3331 (789)
Net Revenue/Dedicated Acre $	1.79 (1.77)	2.25 (0.42)	6.57 (1.67)	4.29 (1.59)	3.51 (0.73)

Landowners conveying hunting rights through means other than leasing averaged $4,380 in costs with manager compensation ($2,192) and guest accommodations ($609) accounting for more than 50% of the total.

Vernon Hartley

Table 16. Average revenues and costs associated with selling hunting rights in Mississippi, by landownership size.

	Landownership Size (Acres)						
	< 260 (n=6)	260 - 499 (n=21)	500 - 999 (n=19)	1000 - 1999 (n=13)	2000 - 4999 (n=12)	≥ 5000 (n=4)	All (n=75)
	Mean (Standard Error)						
Percent of Ownership in Fee-Hunting	100 (0)	82 (6)	76 (8)	59 (8)	89 (8)	47 (19)	79 (3)
Total Revenue $	496 (138)	1189 (208)	2815 (834)	3246 (680)	22692 (3714)	27507 (12538)	6008 (842)
Revenue/Dedicated Acre $	3.56 (0.95)	4.32 (0.64	6.87 (1.79)	4.90 (1.06)	16.23 (9.66)	6.24 (1.95)	6.50 (1.43)
Total Variable Cost	572 (346)	275 (143)	257 (126)	140 (69)	15486 (5393)	5225 (3807)	2677 (782)
Manager Compensation	0 (0)	0 (0)	21 (21)	54 (54)	2500 (2087)	3483 (3574)	537 (341)
Consultant Fees	199 (197)	0 (0)	0 (0)	11 (11)	417 (417)	464 (476)	116 (71)
Professional Fees	0 (0)	0 (0)	0 (0)	0 (0)	2250 (1715)	232 (238)	327 (240)
Liability Insurance	91 (89)	44 (21)	36 (36)	4 (4)	550 (309)	813 (514)	154 (52)
Employee Compensation	0 (0)	0 (0)	0 (0)	0 (0)	167 (167)	0 (0)	23 (23)
Personal Expenses	0 (0)	0 (0)	0 (0)	23 (23)	3625 (3314)	0 (0)	511 (464)
Guest Accommodations	0 (0)	0 (0)	0 (0)	0 (0)	1042 (840)	0 (0)	146 (118)
Guest Food or Beverages	0 (0)	0 (0)	0 (0)	0 (0)	167 (167)	0 (0)	23 (23)
Released Game	0 (0)	0 (0)	0 (0)	0 (0)	2500 (2500)	0 (0)	350 (350)
Advertising/ Marketing	0 (0)	0 (0)	0 (0)	0 (0)	63 (45)	0 (0)	9 (6)
Equipment Maintenance and Repair	95 (89)	71 (52)	58 (40)	8 (8)	750 (498)	0 (0)	155 (73)
Petroleum Products	41 (36)	62 (49)	16 (16)	2 (2)	500 (227)	0 (0)	99 (36)
Contract Services	0 (0)	0 (0)	0 (0)	0 (0)	83 (83)	0 (0)	12 (12)
Ammunition	0 (0)	0 (0)	0 (0)	0 (0)	25 (21)	0 (0)	4 (3)
Seed	7 (8)	43 (31)	37 (28)	15 (15)	425 (226)	0 (0)	83 (34)
Fertilizer/Lime	84 (71)	55 (48)	89 (58)	23 (23)	233 (208)	232 (238)	95 (38)
Miscellaneous Supplies	54 (54)	0 (0)	0 (0)	0 (0)	190 (183)	0 (0)	35 (27)
Net Revenue $	-76 (423)	914 (250)	2558 (808)	3107 (670)	7206 (4172)	22282 (9405)	3331 (789)
Net Revenue/ Dedicated Acre $	-1.05 (3.28)	3.45 (0.79)	6.46 (1.77)	4.72 (1.07)	3.24 (5.32)	5.32 (1.42)	3.51 (0.73)

Table 17. Average revenues and costs associated with fee hunting enterprises, by size category.

	Size of Enterprise Dedicated to Fee-Hunting (Acres)						
	< 260 (n=6)	260 - 499 (n=21)	500 - 999 (n=19)	1000 - 1999 (n=13)	2000 - 4999 (n=12)	≥ 5000 (n=4)	All (n=75)
	Mean (Standard Error)						
Percent of Ownership in Fee-Hunting	65 (5)	89 (5)	79 (5)	89 (7)	90 (7)	77 (18)	79 (3)
Total Revenue $	543 (87)	3565 (1951)	3523 (885)	4030 (779)	20718 (2732)	42500 (18371)	6008 (842)
Revenue/Dedicated Acre $	4.49 (0.82)	9.59 (4.75)	5.92 (1.57)	3.63 (0.71)	6.55 (0.99)	7.56 (3.84)	6.50 (1.43)
Total Variable Cost	308 (184)	2123 (1757)	273 (122)	274 (147)	11525 (4772)	11250 (4287)	2677 (782)
Manager Compensation	0 (0)	1034 (1001)	21 (21)	140 (130)	406 (407)	7500 (6124)	537 (341)
Consultant Fees	108 (103)	0 (0)	0 (0)	0 (0)	406 (407)	1000 (816)	116 (71)
Professional Fees	0 (0)	0 (0)	0 (0)	0 (0)	2194 (1677)	500 (408)	327 (240)
Liability Insurance	54 (47)	42 (23)	35 (35)	10 (9)	536 (302)	1750 (204)	154 (52)
Employee Wages	0 (0)	0 (0)	0 (0)	0 (0)	163 (163)	0 (0)	23 (23)
Personal Expenses	0 (0)	0 (0)	20 (19)	0 (0)	3535 (3237)	0 (0)	23 (23)
Guest Accommodations	0 (0)	414 (400)	0 (0)	0 (0)	203 (203)	0 (0)	146 (118)
Guest Food or Beverages	0 (0)	0 (0)	0 (0)	0 (0)	163 (163)	0 (0)	23 (23)
Released Game	0 (0)	0 (0)	0 (0)	0 (0)	2438 (2442)	0 (0)	350 (350)
Advertising/marketing	0 (0)	0 (0)	0 (0)	0 (0)	61 (44)	0 (0)	9 (6)
Equipment Maintenance and Repair	49 (46)	329 (244)	57 (39)	20 (19)	244 (141)	0 (0)	155 (73)
Petroleum Products	21 (19)	153 (95)	16 (15)	4 (4)	325 (180)	0 (0)	99 (36)
Contract Services	0 (0)	41 (40)	0 (0)	0 (0)	0 (0)	0 (0)	12 (12)
Ammunition	0 (0)	0 (0)	0 (0)	0 (0)	24 (20)	0 (0)	4 (3)
Seed	4 (4)	49 (35)	36 (27)	40 (37)	414 (222)	0 (0)	83 (34)
Fertilizer/Lime	43 (37)	62 (54)	88 (56)	60 (56)	228 (203)	500 (408)	95 (38)
Miscellaneous Supplies	28 (28)	0 (0)	0 (0)	0 (0)	185 (179)	0 (0)	35 (27)
Net Revenue $	236 (231)	1442 (354)	3251 (878)	3756 (710)	9192 (4402)	31250 (14085)	3331 (789)
Net Revenue/Dedicated Acre $	2.03 (1.88)	4.22 (1.02)	5.50 (1.54)	3.37 (0.64)	2.61 (1.26)	5.57 (2.92)	3.51 (0.73)

SOCIOECONOMIC CHARACTERISTICS

Educational attainment:

Overall, 50% of respondents had a bachelor's or higher degree; however, there were differences between fee-hunting participants and non-participants. Fifty-nine percent of participants had a bachelor's or higher degree compared to only 48% of non-participants (Table 18).

Household income:

Overall, 41% of landowners earned $60,000 or more per year. However, there were major differences between incomes earned by fee-hunting participants and non-participants. Fifty-two percent of participants earned $60,000 or more per year, while only 40% of non-participants earned $60,000 or more (Table 18).

Demographic and social characteristics:

Over 80% of landowners sampled were 50 years or older. A predominant majority (83%) of landowners was male. Gender and age did not differ between landowner groups (Table 18). With regard to race and ethnic background, participants constituted a homogeneous group mainly comprised of Caucasians, while non-participants were slightly more heterogeneous and included some Native Americans and Asians.

Attitudes and concerns about fee-access hunting:

To assess landowner concerns about issues related to fee hunting, participants were asked to indicate on a scale of 1 to 5 (1 being not a problem; 5 being a big problem) the extent to which a list of factors (Table 19) were problems arising from fee-hunting, recreational, and/or wildlife-related fee access on their land. For the factors listed, the average rating never exceeded 2, indicating that, in general, problems associated with fee-hunting were typically minor. Conversely, non-participants were asked to report how important factors listed in Table 19 (1 being not important, 5 being very important) were in their decision not to engage in fee hunting. Of the reasons listed, the average rating exceeded 2 in every case and exceeded 3 in the majority of cases. Accident liability concerns, loss of privacy on land, and loss of control or access of land usage were the highest rated reasons for not participating in fee-hunting, while lack of financing, not knowing enough hunters, and tract size were rated least important. In all cases, non-participants rated each factor significantly higher (more problematic) than participants, indicating that problems actually experienced with fee hunting enterprises were less of a problem than non-participants had perceived (Table 19).

Survey results indicated that problems actually experienced with fee hunting enterprises were less of a problem than non-participants had perceived.

Joe Mac Hudspeth Jr.

Table 18. Economic and socio-demographic characteristics, according to participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-Participants (n=75)	Participants (n=389)
Characteristics	Percent (Standard Error)		
Reside Within 20 Miles of Property	58.3 (2.5)	45.9 (6.0)	60.1 (2.7)
Educational Level			
Grade School	2.5 (0.9)	0.0 (0.0)	2.8 (1.0)
Junior High	2.3 (0.9)	1.5 (1.5)	2.4 (0.9)
High	27.7 (2.3)	19.8 (5.3)	28.8 (2.5)
Junior College	13.2 (1.8)	14.0 (4.4)	13.1 (1.9)
Bachelor's	29.2 (2.2)	40.2 (5.9)	27.6 (2.4)
Master's	10.7 (2.2)	10.1 (3.3)	10.8 (1.7)
Professional	7.0 (1.2)	8.8 (3.0)	6.7 (1.3)
Doctorate	2.2 (0.7)	0.9 (0.9)	2.4 (0.7)
No Response	5.2 (1.2)	4.8 (3.1)	5.3 (1.3)
Household Income			
Less $20,000	10.1 (1.7)	10.0 (4.4)	10.1 (1.8)
$20,000-40,000	17.1 (2.0)	16.2 (4.6)	17.2 (2.1)
$40,001-60,000	18.0 (2.0)	8.8 (3.7)	19.3 (2.2)
$60,001-80,000	12.4 (1.6)	13.2 (4.1)	12.3 (1.8)
$80,001-100,000	8.6 (1.3)	12.3 (3.6)	8.1 (1.4)
More than $100,000	20.7 (2.0)	28.3 (5.1)	19.6 (2.0)
No Response	13.2 (1.7)	11.2 (4.0)	13.5 (1.9)
Age			
21 - 30	0.5 (0.4)	0.0 (0.0)	0.6 (0.4)
31 - 40	2.8 (0.8)	2.2 (1.6)	2.8 (0.9)
41 - 50	11.7 (1.6)	15.9 (4.5)	11.1 (1.7)
51 - 60	22.5 (2.1)	15.5 (3.9)	23.5 (2.3)
61 or Older	59.4 (2.5)	61.6 (5.8)	59.1 (2.7)
No Response	3.2 (0.9)	4.8 (3.1)	2.9 (0.9)
Race			
Caucasian	87.6 (1.7)	93.7 (3.3)	86.8 (1.9)
African American	2.8 (0.9)	4.3 (3.1)	2.5 (0.9)
Hispanic	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Native American	5.1 (1.2)	0.0 (0.0)	5.8 (1.3)
Asian	0.6 (0.3)	0.0 (0.0)	0.6 (0.4)
No Response	3.9 (1.0)	2.0 (1.4)	4.2 (1.1)
Gender			
Male	81.2 (2.0)	82.7 (4.7)	81.0 (2.2)
Female	15.6 (1.9)	12.5 (3.9)	16.1 (2.1)
No Response	3.2 (0.9)	4.8 (3.1)	2.9 (0.0)

Table 19. Severity of real or perceived issues associated with fee hunting enterprises, by participation category (non-participants and participants in fee-hunting enterprises). Problems were rated on a scale from 1 (not important) to 5 (very important).

	Participation Category			
	Non-Participants (n=389) [Reasons for Not Engaging in Fee-Hunting]		Participants (n=75) [Problems Experienced with Fee-Hunting]	
Reason/Problem	Mean Rating	Standard Error	Mean Rating	Standard Error
Loss of Control or Access of Who is Using Land	3.59	0.11	1.73	0.17
Loss of Privacy on Land	3.62	0.10	1.68	0.16
Accident Liability Concerns	3.69	0.10	2.00	0.19
Damage to Property	3.42	0.10	1.81	0.17
Damage to Roads, Fences, Fields, Timber or Buildings	3.41	0.10	1.83	0.18
Damage from Arson	3.15	0.10	1.65	0.17
Damage from Litter or Dumping	3.32	0.10	1.89	0.19
Damage from Vandalism	3.21	0.10	1.58	0.17
Disruption of Existing Outdoor Recreation Activities	3.28	0.11	1.41	1.15
Safety for Yourself or Your Family Jeopardized	3.32	0.10	1.41	0.15
Compatibility with Existing Land Uses	2.78	0.10	1.45	0.14
Over Harvest and Disturbance of Wildlife	2.91	0.10	1.46	0.14
Introduction of Pest Species	2.46	0.10	1.20	0.13
Difficulty with Poaching	3.06	0.11	1.81	0.17
Difficulty with Trespassing	3.43	0.10	1.89	0.17
Customer Conflicts	-	-	1.40	0.14
Establishing a Customer Base	-	-	1.39	0.14
Financial Gain Not Worth the Inconvenience	3.37	0.10	-	-
Lack of Financing for Fee-Hunting-Related Activities	2.14	0.10	-	-
Liability Insurance Cost	3.10	0.11	-	-
Do Not Understand Leasing or Other Legal Arrangements	2.25	0.10	-	-
Tracts too Small	2.23	0.09	-	-
Do Not Know Enough Hunters Who Would Pay to Hunt	2.08	0.09	-	-
Do Not Want Wildlife Hunted on Land	2.36	0.10	-	-
Other	0.38	0.07	0.38	0.15

Demand for Public Services and Programs

In all sectors of the U.S. economy, technical knowledge influences the performance of economic activities. While wildlife and recreational enterprises are no exception, little attention has been given to natural resource enterprises by public agencies. To assess what technical and informational needs landowners have with respect to managing wildlife and/or fee-hunting enterprises, the survey posed a set of related questions.

First, landowners were asked to rank the importance of a list of topics, (1 being not important; 5 being very important) in reaching management objectives on their property (Table 20). Mean overall ratings indicated that information about general wildlife management (3.69), laws and regulations about wildlife management (3.68), and liability concerns related to fee-hunting (3.60) were most important. Differences in ratings between landowners who participated in fee hunting and those that did not were not significant. When considered at the sub-state regional level, landowners in the Southwest and Northwest consistently rated the importance of listed topics in reaching their management goals higher than landowners in the Southeast and Northeast (Table 21) although relative rankings within regions were generally similar.

Second, to assess the current availability of wildlife management related information, landowners were asked to indicate information availability (1 being no information available; 5 being complete information available) for the same list of topics as the previous question (Table 22). Overall, results suggested that landowners generally felt information pertaining to achieving management goals was relatively unavailable. Only food plot establishment and management had an average information availability rating above 3.50, while availability ratings for seven of the 12 information topics averaged below 3.00. Landowners who participated in fee-hunting enterprises, however, generally reported that information on listed topics pertinent to achieving management goals on their property was more available than did landowners who did not participate in fee-hunting. Viewed at the sub-state regional level, landowners in the western regions generally felt more information was available than landowners in the eastern portions (Table 23).

Third, to determine what forms of informational media were preferred by landowners, respondents were asked to rank the importance of various media as sources of information for management decisions pertaining to wildlife management on their property (Table 24). Printed information sheets and brochures, consultation by an expert, and other landowners were ranked highest (all above 3.0). Magazines, newspapers, and books ranked higher than did demonstration areas and short courses/workshops. Interestingly, landowners not engaged in fee-hunting consistently ranked all media higher than did landowners who were engaged in fee hunting.

Fourth, to find which wildlife-associated institutions landowners relied on for information about wildlife management, landowners were asked to check those institutions or organizations they would contact. The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) was most frequently selected (77%) , followed by the MSU Extension Service (56.5%), the U.S. Fish and Wildlife Service (35.9%) and the Natural Resources Conservation Service (29.2%) (Table 25).

Finally, landowners were asked in which conservation programs they participated. Seventeen percent participated in CRP (Table 26). Respective participation rates for fee-hunting participants and non-participants were 23% and 16%. Landowner participation in EQIP, WHIP, WRP, and conservation easement programs was less than 5% regardless of landowner type.

Table 20. Importance of various topics of information (1=Not important to 5=Very important) pertinent to fee hunting enterprises, by participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-Participants (n=389)	Participants (n=75)
Information Topic	Mean Rating (Standard Error)		
General Wildlife Management	3.69 (0.07)	3.68 (0.08)	3.75 (0.16)
Food Plot Establishment and Management	3.46 (0.08)	3.50 (0.09)	3.13 (0.20)
Management for Specific Wildlife Species	3.40 (0.08)	3.43 (0.09)	3.22 (0.21)
Harvest Strategies for Game Animals	3.32 (0.08)	3.35 (0.09)	3.13 (0.19)
Management of Aquatic/Wetland Resources	2.62 (0.09)	2.63 (0.10)	2.57 (0.23)
Cost Sharing Programs	3.13 (0.09)	3.14 (0.10)	3.05 (0.22)
Laws/Regulations about Wildlife Management	3.68 (0.08)	3.70 (0.09)	3.55 (0.20)
Liability Concerns Related to Fee-Hunting	3.60 (0.09)	3.55 (0.10)	3.91 (0.18)
Marketing a Fee-Hunting Enterprise	2.29 (0.08)	2.32 (0.09)	2.14 (0.18)
Tax Implications of a Fee-Hunting Enterprise	2.59 (0.09)	2.61 (0.10)	2.44 (0.19)
Business Planning for a Fee-Hunting Enterprise	2.41 (0.09)	2.43 (0.10)	2.30 (0.17)
Compatibility of Wildlife Management with Other Uses	3.49 (0.09)	3.54 (0.09)	3.16 (0.20)

Table 21. Importance of various topics of information (1=Not important to 5=Very important) pertinent to fee hunting enterprises, by sub-state region.

	Sub-State Region			
	South-east (n=91)	North-east (n-143)	South-west (n=156)	North-west (n=75)
Type of Information	Mean Rating (Standard Error)			
General Wildlife Management	3.50 (0.17)	3.44 (0.13)	3.83 (0.19)	4.00 (0.12)
Food Plot Establishment and Management	3.50 (0.18)	3.22 (0.14)	3.48 (0.20)	3.63 (0.15)
Management for Specific Wildlife Species	3.26 (01.8)	3.17 (0.14)	3.63 (0.21)	3.62 (0.14)
Harvest Strategies for Game Animals	3.10 (0.18)	3.16 (0.16)	3.32 (0.20)	3.61 (0.14)
Management of Aquatic/Wetland Resources	2.77 (0.21)	2.37 (0.14)	2.98 (0.24)	2.60 (0.16)
Cost Sharing Programs	2.89 (0.22)	3.23 (0.15)	3.40 (0.22)	3.09 (0.16)
Laws/Regulations about Wildlife Management	3.59 (0.19)	3.60 (0.15)	3.74 (0.20)	3.79 (0.14)
Liability Concerns Related to Fee-Hunting	3.51 (0.20)	3.53 (0.15)	3.31 (0.23)	3.84 (0.16)
Marketing a Fee-Hunting Enterprise	2.01 (0.16)	2.26 (0.15)	2.54 (0.22)	2.43 (0.16)
Tax Implications of a Fee-Hunting Enterprise	2.53 (0.20)	2.44 (0.15)	2.35 (0.22)	2.87 (0.18)
Business Planning for a Fee-Hunting Enterprise	2.45 (0.21)	2.24 (0.14)	2.34 (0.23)	2.59 (0.17)
Compatibility of Wildlife Management with Other Uses	3.40 (0.18)	3.25 (0.16)	3.43 (0.23)	3.81 (0.14)

Table 22. Perceived availability of various topics of information (1=No information available to 5=Complete information available) pertinent to fee hunting enterprises, by participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-Participants (n=389)	Participants (n=75)
Type of Information	Mean (Standard Error)		
General Wildlife Management	3.42 (0.07)	3.40 (0.08)	3,58 (0.17)
Food Plot Establishment and Management	3.53 (0.08)	3.50 (0.08)	3.71 (0.18)
Management for Specific Wildlife Species	3.33 (0.08)	3.32 (0.09)	3.45 (0.19)
Harvest Strategies for Game Animals	3.32 (0.08)	3.32 (0.08)	3.31 (0.19)
Management of Aquatic/ Wetland Resources	2.92 (0.09)	2.92 (0.09)	2.87 (0.21)
Cost Sharing Programs	2.86 (0.09)	2.87 (0.10)	2.81 (0.19)
Laws/Regulations about Wildlife Management	3.46 (0.08)	3.41 (0.09)	3.80 (0.19)
Liability Concerns Related to Fee-Hunting	2.73 (0.09)	2.67 (0.10)	3.07 (0.17)
Marketing a Fee-Hunting Enterprise	2.46 (0.08)	2.41 (0.09)	2.76 (0.18)
Tax Implications of a Fee-Hunting Enterprise	2.49 (0.09)	2.46 (0.10)	2.71 (0.18)
Business Planning for a Fee-Hunting Enterprise	2.34 (0.09)	2.35 (0.10)	2.32 (0.19)
Compatibility of Wildlife Management with Other Uses	2.97 (0.08)	2.96 (0.09)	3.02 (0.22)

Table 23. Perceived availability of various topics of information (1=No information available to 5=Complete information available) pertinent to fee hunting enterprises, by sub-state region.

	Sub-State Region			
	South-east (n=91)	North-east (n=143)	South-west (n=156)	North-west (n=75)
Type of Information	Mean (Standard Error)			
General Wildlife Management	3.17 (0.17)	3.35 (0.15)	3.62 (0.17)	3.60 (0.11)
Food Plot Establishment and Management	3.28 (0.16)	3.51 (0.14)	3.61 (0.18)	3.69 (0.13)
Management for Specific Wildlife Species	2.95 (0.16)	3.35 (0.15)	3.62 (0.19)	3.49 (0.13)
Harvest Strategies for Game Animals	2.95 (0.17)	3.29 (0.14)	3.52 (0.19)	3.53 (0.12)
Management of Aquatic/Wetland Resources	2.46 (0.17)	2.99 (0.16)	3.06 (0.22)	3.16 (0.15)
Cost Sharing Programs	2.46 (0.19)	2.96 (0.17)	3.09 (0.22)	3.00 (0.15)
Laws/Regulations about Wildlife Management	3.07 (0.18)	3.37 (0.16)	3.59 (0.20)	3.76 (0.12)
Liability Concerns Related to Fee-Hunting	2.54 (0.18)	2.60 (0.18)	2.78 (0.16)	2.96 (0.14)
Marketing a Fee-Hunting Enterprise	2.17 (0.17)	2.41 (0.17)	2.50 (0.18)	2.71 (0.14)
Tax Implications of a Fee-Hunting Enterprise	2.29 (0.18)	2.44 (0.17)	2.59 (0.21)	2.65 (0.14)
Business Planning for a Fee-Hunting Enterprise	2.16 (0.17)	2.32 (0.18)	2.36 (0.18)	2.49 (0.15)
Compatibility of Wildlife Management with Other Uses	2.62 (0.17)	2.98 (0.17)	2.99 (0.19)	3.21 (0.13)

Table 24. Perceived importance of various sources of information (1=Not important to 5=Very important) pertinent to fee hunting enterprises, by participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-Participants (n=389)	Participants (n=75)
Information Source	Mean (Standard Error)		
Printed Information Sheets or Brochures	3.42 (0.08)	3.48 (0.08)	2.97 (0.19)
Radio	1.94 (0.06)	1.99 (0.07)	1.62 (0.13)
Television	2.36 (0.07)	2.42 (0.08)	1.93 (0.16)
Magazines	2.94 (0.08)	2.98 (0.08)	2.64 (0.19)
Newspapers	2.72 (0.08)	2.80 (0.08)	2.16 (0.17)
Books	2.72 (0.08)	2.80 (0.08)	2.21 (0.17)
Videos	2.47 (0.08)	2.54 (0.08)	2.03 (0.17)
Demonstration Areas/Field Days	2.67 (0.08)	2.74 (0.09)	2.22 (0.18)
Short Courses, Workshops, etc.	2.70 (0.08)	2.75 (0.09)	2.34 (0.19)
Internet Web sites	2.36 (0.08)	2.41 (0.09)	2.04 (0.17)
E-mail	2.05 (0.07)	2.08 (0.08)	1.84 (0.16)
Consultation by an Expert	3.13 (0.09)	3.21 (0.09)	2.56 (0.20)
Other Landowner	3.00 (0.07)	3.06 (0.08)	2.54 (0.19)

Table 25. Agencies and organizations that landowners contact for wildlife management related information (1=No information available to 5=Complete information available), by participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-Participants (n=389)	Participants (n=75)
Institution	Percent (Standard Error)		
MS Department of Wildlife, Fisheries and Parks	77.2 (2.2)	78.7 (2.3)	66.9 (6.0)
MSU Extension Service	56.5 (2.6)	56.5 (2.8)	56.7 (6.3)
Natural Resource Conservation Service	29.2 (2.3)	30.0 (2.5)	23.8 (4.9)
Universities	14.0 (1.8)	13.8 (1.9)	15.3 (4.2)
Farm Supply Store	22.4 (2.2)	21.7 (2.3)	27.9 (5.8)
Sporting Goods Store	10.3 (1.6)	9.56 (1.7)	15.3 (5.3)
U.S. Fish and Wildlife Service	35.9 (2.5)	36.9 (2.8)	28.5 (5.5)
Other	9.6 (1.5)	8.6 (1.6)	16.4 (4.8)

Table 26. Percent of landowners that received habitat improvement assistance from various sources, by participation category (non-participants and participants in fee-hunting enterprises).

	Participation Category		
	All (n=464)	Non-Participants (n=389)	Participants (n=75)
Source	Percent (Standard Error)		
Conservation Reserve Program	17.2 (1.7)	16.4 (1.8)	22.7 (4.6)
Wetlands Reserve Program	1.4 (0.6)	1.5 (0.7)	1.1 (1.1)
Environmental Quality Incentives Program	2.4 (0.7)	1.8 (0.7)	6.5 (2.5)
Wildlife Habitat Incentives Program	2.7 (0.9)	2.9 (1.0)	1.1 (1.1)
Conservation Easements	0.4 (0.4)	0.4 (0.4)	0.0 (0.0)
Private Wildlife Organizations[1]	1.7 (0.6)	1.7 (0.6)	1.1 (1.1)
Other	1.0 (0.5)	0.8 (0.6)	2.2 (1.6)

[1]Ducks Unlimited, Quail Unlimited, and National Wild Turkey Federation

POLICY IMPLICATIONS

Less than 17% of Mississippi landowners engage in any type of fee-access recreation on their lands. Clearly, there is ample opportunity to enhance fee-access recreation on private lands in Mississippi. Efforts to enhance fee-access recreation should consider the following key points documented by this study:

1. Landowners engaged in fee-access recreation overwhelmingly engaged in fee-hunting. While the reasons for this disparity were not addressed in this study, it appears that the predominance of fee-hunting enterprises results from a combination of existing, wide spread demand for hunting opportunities, and the relative ease with which a landowner can participate. For whatever reason, current low participation in non-hunting, fee-access recreation suggested that these type enterprises are inherently more difficult to establish. Efforts to increase participation in fee-access recreation, therefore, should focus on fee-hunting initially. Subsequent research and outreach should investigate opportunities for non-hunting fee access recreation and methods for easing entry into these arenas.
2. Landowners participating in fee-hunting had, on average, considerably larger ownerships than landowners not participating. This suggested that barriers to entry for those with small landownerships were greater than those for owners of large land holdings. Thus, efforts to increase landowner participation should focus on large landownerships, at least initially. Subsequent research should investigate why size differences exist.
3. Annual leases were the standard method of conveying hunting rights; however, other methods were, on average, more profitable. Thus, efforts to increase landowner net returns from fee-hunting should focus on package hunts, gun fees, day permits, and short-term leases.
4. Package hunts, gun fees, day permits, and short-term leases involved considerably more expenditures on the landowner's part. Thus, efforts to stimulate rural economies through fee-access recreation should promote these types of enterprises because their economic impact on local economies is greater.

5. Fee-hunting enterprises in the state's western regions were considerably more profitable than such enterprises in the eastern portions. Thus, to maximize landowner welfare, efforts to promote fee-hunting should target the western regions.
6. The severity of problems associated with fee-hunting, as experienced by participating landowners, was substantially lower than the severity of problems associated with fee-hunting as perceived by non-participating landowners. This result suggested that education and information outreach may be particularly effective in reducing landowner resistance to fee-hunting.
7. Land-use composition by ownership was substantially different than land use composition dedicated to fee-hunting. This suggested that market forces were preferentially selecting certain land uses for inclusion in hunting leases which in turn suggested that per acre lease prices may vary considerably by land use and, in extreme cases, may be negative. Further research is needed to ascertain differences in lease prices by land use type so landowners may most effectively parcel their property to generate maximum lease values.
8. When landowners ranked the importance and availability of information on a variety of topics pertinent to operating a fee-hunting enterprise, there were substantial differences between the two. Many traditional topics such as food plot establishment and management were considered important but information was readily available. This suggested that past outreach efforts have been successful. Future efforts, however, should address topics ranked important but for which information was relatively unavailable.
9. Landowners reported very little use of the Internet as a method of developing a customer base. Web pages can be extremely effective, low cost tools for reaching potential customers. Since increasing the demand for one's fee-access operation can translate into higher prices, outreach efforts should provide training in web-based marketing and advertising.
10. There were substantial sub-state regional differences in almost every response category in the survey. Thus, a one size fits all outreach approach is unlikely to be as effective as outreach efforts that recognize and adjust to regional differences.

INFORMATION AND MATERIALS ON FEE-HUNTING ENTERPRISES?

For more information on natural resource enterprises, including types of enterprises to consider, management and financial planning, marketing an enterprise, ways to reduce accident liability, landowner cost-share programs, and wildlife habitat management on your land, please go to the Natural Resource Enterprises Program web site at www.naturalresources.msstate.edu and click on "Resources." This program conducts informative workshops on enterprise development on private lands and upcoming events are listed under "Events and Workshops" on the above listed web site.

LITERATURE CITED

Bergstrom, J.C., H.K. Cordell, G.A. Ashley, and A.E. Watson. 1990. Economic impacts of recreational spending on rural areas: a case study. Economic Development Quarterly 4(1):29-39.

Brown, D.G., K.M. Johnson, T.R. Loveland, and D.M. Theobald. 2005. Rural land-use trends in the conterminous United States, 1950-2000. Ecological Applications 15(6):1851-1863.

Jones, W.D., I.A. Munn, S.C. Grado, and J.C. Jones. 2001. Fee hunting: An income source for Mississippi's nonindustrial private landowner. Forest and Wildlife Research Center, Mississippi State University, Bulletin No. 164.

Measells, M.K., S.C. Grado, H.G. Hughes, M.A. Dunn, J.O. Idassi, and R.J. Zielinske. 2005. Nonindustrial private forest landowner characteristics and use of forestry services in four southern states: results from a 2002-2003 mail survey. Southern Journal of Applied Forestry. 29(4):194-199.

Teasley, R.J., J.C. Bergstrom, H.K. Cordell, S.J. Zarnech, and P. Gentle. 1997. Private lands and outdoor recreation in the United States. Department of Agricultural and Applied Economics, College of Agricultural and Environmental Sciences, University of Georgia. Faculty Series Report, FS-97-19. 59pp.

Mississippi State
UNIVERSITY