

Fee Hunting

An Income Source for Mississippi's
Non-Industrial, Private Landowners



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Introduction

Mississippi's ecologically rich and diverse land base extends from the longleaf pine savannahs of the southern Coastal Flatwoods and Lower Coastal Plain to the pine-hardwood forests of the northern Interior Flatwoods and Upper Coastal Plain. The majority of forests, agricultural lands, wetlands, and watersheds are privately owned and support a diversity of game and non-game wildlife species (USDA/NRCS 1996). Traditionally, agricultural and timber production have been major sources of income for non-industrial, private (NIP) landowners in Mississippi. With the popularity of wildlife-related recreation, particularly hunting, Mississippi landowners can diversify their income through fee hunting activities if they have adequate habitat to support game species.

The promotion of fee-based wildlife recreation on private lands encourages voluntary conservation and restoration of ecologically sensitive lands, with limited state and federal governmental involvement. Incentive-based federal programs, such as the U.S. Department of Agriculture's Conservation Reserve and Wetland Reserve Programs, have protected numerous acres of marginal lands within the state. However, enrollment in these programs is limited by the available funding, which is subject to the uncertainty of the federal budgeting process. Section 404 of the 1972 Clean Water Act and the Endangered Species Act of 1987 provide

regulatory measures for the protection of wetlands (CEQ 1989); however, private landowners are seldom supportive of such regulations (Pease et al. 1997).

Wildlife recreation on private lands can benefit many Mississippi stakeholders. Private landowners can derive additional income from hunting, fishing, and non-consumptive activities such as bird watching and nature tours. Landowners who improve wildlife habitat quality, and thereby increase game concentrations, increase the recreational value of their land (Guynn 1990). Many forest and habitat management practices, including vegetation plantings and prescribed burning, benefit wildlife populations (Yarrow 1990; Johnson 1995). The net effects of landowner involvement in fee-based wildlife recreation are more conserved and restored acreage without the use of traditional regulatory measures; additional income sources for landowners; and enhanced opportunities for outdoor enthusiasts.

Little information is available concerning the number of non-industrial private landowners engaged in fee hunting, the amount and type of land dedicated to fee hunting by landowners, the various wildlife management practices these landowners implement, the costs and revenues associated with fee hunting, and various other issues related to fee hunting. This study was designed to provide this information for Mississippi.

Methods

Non-industrial, private landowners owning a minimum of 40 acres in Mississippi were identified and randomly selected from the 1995 property tax records by the Survey Research Unit of the Social Science Research Center at Mississippi State University. Forty acres was selected as a minimum to eliminate urban and suburban properties included in the property tax records. A mail questionnaire was developed using a multi-disciplinary effort involving forestry, wildlife, social science, and environmental policy professionals. Four independent surveys were conducted consisting of a regional and a statewide survey for the 1996-1997 hunting season and a regional and statewide survey for the 1997-1998 hunting season. The 1996-1997 regional survey targeted the Mississippi counties of Issaquena, Sharkey, Warren, and Washington in the southern portion of the Mississippi River Alluvial Valley (Delta counties) and the 1997-1998 regional survey targeted the Mississippi counties of Jackson, Harrison, Hancock, Pearl River, Stone, and George along the state's gulf

coast (Gulf Coast counties). These regional survey areas were selected because they represent extremes in land use types. In the Delta, the percentage of the land base devoted to agriculture is among the highest in the state. Similarly, the percentage of the land base devoted to forestry in the Gulf Coast counties is among the state's highest (Hartsell and London 1995). The statewide surveys sampled the entire state and did not exclude respondents from the regional survey areas. Therefore, summaries of statewide surveys represent the entire state, not just the portions of the state outside the regional survey areas.

For the 1996-1997 hunting season, 1,363 questionnaires were mailed to a random sample of Mississippi landowners statewide and 1,293 questionnaires were mailed to a random sample of Delta county landowners at the end of March 1997. Landowners who did not return the questionnaire were sent a second questionnaire. Landowners were requested to confine their answers to the period March 1,

1996, to March 1, 1997, to reflect activities related to the 1996-97 Mississippi hunting season.

For the 1997-1998 hunting season, 2,030 questionnaires were mailed to a random sample of Mississippi landowners and 2,280 questionnaires were mailed to a random sample of Gulf Coast county landowners at the end of March 1998. The size of the original mailing was increased and the follow-up mailing eliminated to reduce survey time but still obtain approximately the same number of valid responses. Responses pertaining to the period March 1, 1997, to March 1, 1998, were requested to reflect activities related to the 1997-98 Mississippi hunting season.

The questionnaire was designed to obtain information on land ownership patterns, expenditures for wildlife management activities, and revenues and expenditures for fee hunting activities. Landowners were asked to report the acres owned by county and land-use type (e.g., forested, agriculture, wetlands, and other), whether they allowed hunting on their land, and whether they charged for hunting privileges.

Landowners who sold hunting privileges on their property were asked to report the payment method they used. Three payment methods were identified: hunting leases, permit hunting, and agreements with outfitters or guides. Hunting leases provide a group of hunters the sole right to

hunt specified portions of the landowner's property for a period of one or more years. Lease payments are specified in the lease agreement. Permit hunting allows individual hunters the right to hunt a specified portion of the landowner's property for a limited time - typically a day - in exchange for a permit or gun fee. Outfitter or guide arrangements provide outfitters with exclusive hunting privileges for a specified portion of the landowner's property. Outfitters then provide guided hunts on this land. Typically, the landowner receives an annual fee or a percentage of the outfitter's gross revenue.

For each payment method, landowners were asked to report the wildlife species included in the agreement and the acreage dedicated to fee hunting by land type. To estimate net returns, landowners were also asked to report hunting-related overhead expenses and wildlife management expenses. Overhead expenditures included manager or caretaker wages, liability insurance premiums, personal supervision, trespass prevention and property posting expenses, and guest accommodation costs. Wildlife management activities included vegetation management practices, establishment of food sources and cover, installation and maintenance of blinds and tree stands, and plantings and flooding for waterfowl. Property taxes were excluded from the study.

Results

Response Rates

For the 1996-1997 hunting season, 1,363 questionnaires were sent to a random sample of Mississippi landowners and 1,293 questionnaires were sent to a random sample of Delta county landowners. Landowners who did not return the questionnaire were sent a second questionnaire. Six hundred fifty three and 567 completed surveys were returned, respectively. After accounting for surveys returned because of incorrect addresses, property sales, or deceased landowners, the response rates were 48% and 49%, respectively.

For the 1997-1998 hunting season, 2,030 questionnaires were sent to a random sample of Mississippi landowners and 2,280 questionnaires were sent to a random sample of Gulf Coast county landowners. In order to reduce survey time but still obtain approximately the same number of valid responses, the size of the original mailing was increased and the follow-up mailing eliminated. For the statewide sample, 555 completed surveys were returned and for the Gulf Coast sample, 508 completed surveys were

returned. The response rates were 28% and 22%, respectively. No information was recorded for surveys returned due to incorrect addresses, property sales, or deceased landowners, so these rates are not adjusted for surveys sent to invalid addresses.

The percentage of respondents that charged for hunting privileges was very small, ranging from 8% in the Gulf Coast counties to 14% in the Delta.

Types of Hunting

Most respondents allowed hunting of some type on their land. Over the two year survey period, the percentage of respondents allowing hunting ranged from 50% in the Delta during the 1996-1997 season to 77% statewide during the 1997-1998 season (Table 1). Most of these respondents allowed people to hunt without paying a fee. For example, 68% of respondents to the 1997-1998 statewide survey did not charge for hunting privileges. However, these free hunting privileges were extended almost exclusively to family and friends only. Less than 5% of respondents allowed the general public to hunt for free without first obtaining permission.

Up to an additional 12% of respondents allowed the general public to hunt for free but only if the hunters obtained permission first. The percentage of respondents that charged for hunting privileges was very small, ranging from 8% in the Gulf Coast counties to 14% in the Delta.

Ownership Size and Composition

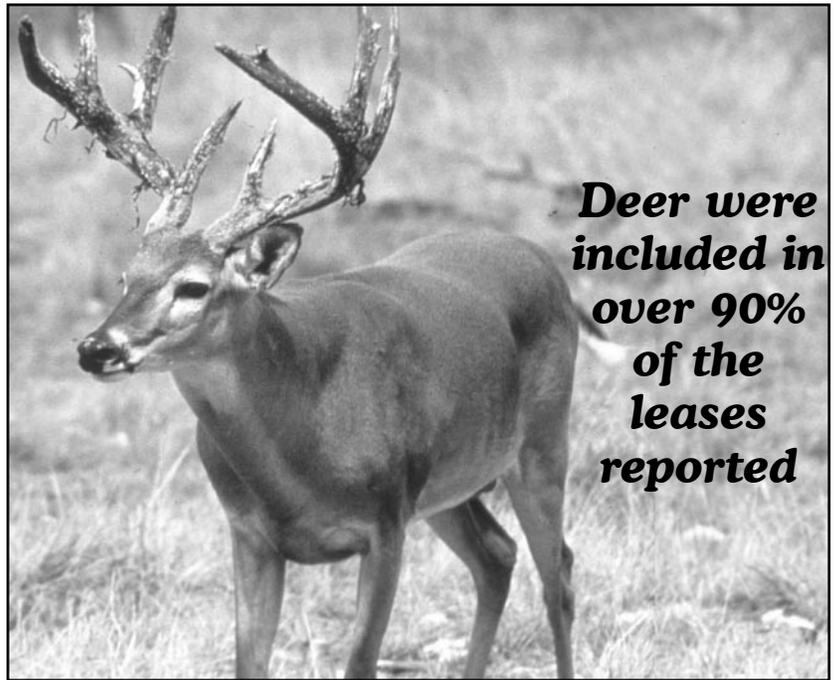
The land composition with respect to proportions of forest, agricultural, and other uses reported in these surveys reflects state and regional distributions. In the two statewide surveys, forests accounted for 56% and 60% of the average ownership (Table 2) which is consistent with the proportion of forest land on NIP ownerships in Mississippi as reported by Hartsell and London (1995). For the Delta counties, where agriculture predominates, forests accounted for only 32% of the average ownership. In contrast, for the Gulf Coast counties, where forestry predominates, forests accounted for 78% of the average ownership.

There were dramatic differences with respect to size of ownership between respondents that engaged in fee hunting and those who did not. For example, average ownership sizes for respondents engaged in fee hunting were 1,439 in the Delta counties and 1,590 in the Gulf Coast counties (Table 3), compared to 723 and 204 acres, respectively, for respondents not engaged in fee hunting (Table 4).

Furthermore, there were dramatic differences in land use composition with respect to proportions of forest, agricultural, and other uses between fee hunters and the general population. For all surveys, the proportion of forestland was substantially greater on ownerships of respondents engaged in fee hunting. For example, forests represented 90% of the average ownership of respondents engaged in fee hunting in the Gulf Coast 1997-1998 survey (Table 3), compared to only 78% for all Gulf Coast 1997-1998 respondents (Table 2). The difference was even greater in the statewide surveys.

Payment Methods

Hunting leases were the most common payment method used for fee hunting, ranging from 7% of respondents in the Gulf Coast survey to 13% in the 1997-1998 state survey (Table 5). In contrast, 3% or fewer respondents sold individual hunting permits (Table 6) and even fewer respondents (< 1%) had agreements with guides or outfitters (Table 7).



Respondents who leased hunting rights owned, on average, between 1,066 and 1,628 acres depending on the survey region (Table 5). These respondents dedicated, on average, between 52% and 73% of their total ownership to hunting leases. Forests represented the overwhelming majority of leased lands. In the Delta counties, forests accounted for 70% of leased lands. In the Gulf Coast counties, forests accounted for 97% of leased lands. The percentage of forests in hunting leases for the statewide surveys fell between these extremes. Over 90% of respondents that leased included white-tailed deer (*Odocoileus virginianus*) in their leases (Table 8). The wild turkey (*Meleagris gallopavo*) was the second most commonly included species, ranging from 64% in the Delta to 79% in the Gulf Coast. Waterfowl were commonly included in Delta leases (52%) but not in other regions. Quail (*Colinus virginianus*), dove (*Zenaida macroura*), and other game were also included by 22% to 45% of respondents, depending on the species and survey.

Respondents who sold individual hunting permits owned, on average, between 1,137 and 1,826 acres and dedicated between 33% and 68% of their ownership to permit hunting depending on the survey region (Table 6). As with hunting leases, forests accounted for the majority of lands dedicated to permit hunting. Deer were the most commonly featured species, ranging from 73% in the 1996-1997 state survey to 100% in the Gulf Coast survey (Table 9). Although dove hunting is a southern tradition (Hawkins 2000) that lends itself to permit hunting, the percentage of permit arrangements including dove was not substantially different than the percentage of hunting leases including dove.

Arrangements with guides and outfitters were not common in our study but were most frequent in the Delta. Delta landowners with arrangements with guides or outfitters dedicated 51% of their landholdings to the activity. Forested acreage accounted for 77% of the total lands committed to this arrangement (Table 7).

Overhead Expenditures

Overhead expenditures are reported two ways: expenditures averaged across all respondents engaged in fee hunting (Tables 10 - 11) and expenditures averaged across those respondents engaged in fee hunting that incurred each expense (Tables 12 - 13). The first illustrates average expenditures for fee hunting landowners as a group. The second illustrates the average size of these expenditures for the landowners that incur them.

Overhead expenditures are substantially greater in the Delta and Gulf Coast counties compared to the statewide surveys. Mean overhead expenditures averaged \$1,981 in the Delta for the 1996-1997 season and \$863 in the Gulf Coast counties for the 1997-1998 season. In contrast, mean overhead expenditures in the statewide surveys were \$290 for 1996-1997 and \$199 for 1997-1998 (Table 10). In addition to this difference in overall magnitude, there was also a difference in the composition of overhead expenditures between the regional and statewide surveys. In the Delta and Gulf Coast counties, managerial expenses were the largest category followed by "other expenses," liability insurance, and road and trail construction. Guest accommodations and personal supervision also represented substantial expenditures in the Delta counties. In the statewide surveys, liability insurance and road and trail construction were the primary expenditures.

Overhead expenditures for the Delta and Gulf Coast counties were \$2.21 per acre and \$0.71 per acre respectively for land dedicated to fee hunting. For the statewide surveys, overhead expenditures averaged \$0.31 per acre in the 1996-1997 season and \$0.24 in the 1997-1998 season (Table 11). The relative magnitude of the various categories did not vary substantially from total overhead expenditures.

Although overall means provide interesting information about average overhead expenditures incurred by respondents engaged in fee hunting as a group, it provides very little information about typical expenditures for those who incur specific costs. Fewer than 35% of fee hunting respondents in

**Statewide,
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1997-1998 season.**

each survey incurred any type of overhead expenditure. The percentage was even lower for any specific overhead category. Mean overhead expenditures for respondents who reported such expenditures varied greatly between surveys from a high of \$7,469 for the Delta survey to \$1,084 for the 1996-1997

state survey (Table 12). Although mean overhead expenditures for the statewide 1997-1998 survey were higher than those for the Delta counties, this higher total resulted from one landowner with a full-time manager. Respondents in the Delta who incurred overhead expenditures generally paid substantially more than respondents in other surveys. Delta respondents with overhead expenditures averaged \$3.61 per acre in total overhead expenditures compared to expenditures of less than \$1.00 per acre for respondents in the Gulf Coast counties and state 1997-1998 surveys (Table 13).

Wildlife Management Expenditures

For the 1996-1997 survey, respondents were asked to report their total wildlife management expenditures. Thus, the responses represent wildlife management expenditures for personal and/or fee hunting related purposes. Due to the survey design, it was not possible to isolate fee hunting and personal use related expenditures. Because most fee hunting landowners dedicated only part of their land to their fee hunting operations, some of their wildlife management expenditures may have been related to their personal hunting. Therefore, profits from fee hunting calculated using these expenditures are probably understated. For the 1997-1998 survey, only fee hunting respondents were asked to report their wildlife management expenditures and then only those related to their fee hunting operations. Thus, the responses represent wildlife management activities strictly for fee hunting on lands dedicated to fee hunting and can be used to provide a more accurate estimate of net revenues

About 23% of all respondents for the 1996-1997 season spent money on wildlife management (Table 14). Of those landowners actively managing for wildlife, Delta respondents spent, on average, \$3,504 per year compared to \$2,332 per year for respondents statewide. Vegetation management and planting food and cover crops were the most common activities. Twenty percent of respondents statewide and 18% of Delta respondents undertook these activities. Waterfowl management was more common in the Delta (9% of all respondents) than statewide (< 3%). Those respon-

dents who did manage for waterfowl spent considerable amounts, averaging over \$1,800 per year in the Delta and \$1,400 per year statewide.

About 19% of all fee-hunting respondents for the 1997-1998 season actively managed for wildlife as part of their fee hunting operation. Of those landowners engaged in fee hunting and actively managing for wildlife, Gulf Coast respondents spent, on average, \$2,798 per year for wildlife management and state-wide respondents spent, on average, \$2,556.

For all landowners engaged in fee hunting, wildlife management expenditures in 1996-1997, which included personal and fee hunting related expenditures, averaged \$1,477 and \$2,240 for the statewide and Delta surveys, respectively. Wildlife management expenditures in the 1997-1998 season, which included fee hunting related expenditures only, averaged \$401 and \$502 for the state-wide and Gulf Coast surveys, respectively (Table 15). For the statewide surveys, average wildlife management expenditures were \$1.54/acre in 1996-1997 and \$1.28/acre in 1997-1998 (Table 16). Per acre expenditures were greatest in the Delta counties (\$2.54/acre) and lowest in the Gulf Coast counties (\$0.42/acre). By comparing expenditures for the two seasons, it appears that, on average, landowners spend considerably more on wildlife management for personal hunting than for their fee hunting operation.

Gross Revenues

Annual gross revenues from fee hunting were greatest in the Delta counties, averaging \$4,007 for hunting leases, \$8,339 for permit hunting, \$10,450 for arrangements with outfitters and guides, and \$5,254 overall (Table 17). Gross revenues from hunting leases were reasonably consistent across all survey groups; however, gross revenues from permit hunting and outfitter and guide arrangements were substantially greater in the Delta, thus resulting in higher overall gross revenues than other survey areas. Total gross revenues for the Gulf Coast and statewide surveys were at least \$1,000 less. On a per acre basis, gross revenues averaged \$5.86 in the Delta versus \$3.28 in the Gulf Coast, and \$3.08 and \$4.63 statewide for the 1996-1997 and 1997-1998 seasons, respectively (Table 18).

Annual net revenues averaged \$3.91 per acre statewide during the 1997-1998 hunting season.

Net Revenues

Annual net revenues for the 1997-1998 season were substantially greater than the net revenues for the 1996-1997 season (Table 19). However, expenditures in the 1996-1997 season surveys included wildlife management expenditures related to personal hunting. Thus, net revenues from fee hunting for the 1996-1997 season are understated. Average net revenues for the 1997-1998 season more accurately represent typical net revenues available from fee hunting. Net revenues averaged \$3,244 per landowner for the statewide survey and \$2,655 for Gulf Coast counties. Although gross revenues were greater in the Gulf Coast counties, net revenues were lower due to higher overhead and wildlife management expenditures.

On a per acre basis, annual net revenues averaged \$3.91 statewide and \$2.17 in the Gulf Coast counties (Table 20). Net revenues for hunting leases ranged from \$4.59/acre statewide to \$2.29/acre in the Gulf Coast counties and, in general, were greater than net revenues per acre for permit hunting and outfitter/guide arrangements. The exception was guide/outfitter arrangements in the Delta where net revenues averaged \$4.91/acre.

Although net revenues for permit hunting appear to be low, many respondents engaged in permit hunting also had comparatively high overhead costs, particularly for guest accommodations and other permanent improvements. It appears likely that many of these landowners are in the process of developing a hunting based operation, and net revenues should increase once operations become fully established.

Landowner Attitudes

Statewide and Gulf Coast respondents engaged in fee hunting during the 1997-1998 season were asked to rate problems associated with fee hunting listed in the survey on a scale from 1 (not a problem) to 5 (big problem). None of the problems received an average rating above 3, indicating that landowners engaged in fee hunting generally do not experience serious problems (Table 21). Poaching and trespassing was the highest rated problem, averaging 2.24 statewide and 2.18 for the Gulf Coast counties. Accident liability was rated next highest, with average ratings of 1.91 statewide and 2.03 for the Gulf Coast counties. Ratings for the remaining problems listed were lower, ranging from 1.25 to 1.82.

Respondents not engaged in fee hunting were asked to rate reasons why they elected not to participate in this

activity on a scale from 1 (not important) to 5 (very important). The average ratings for loss of land control, loss of privacy, accident liability, damage to property, and poaching and trespassing were all above 4 for both the statewide and Gulf Coast surveys. Overharvest of wildlife, financial gain not worthwhile, and not wanting wildlife hunted were rated

between 3 and 4. These ratings indicate substantial differences between the actual and perceived problems. Twenty-four percent of statewide respondents and 14% of Gulf Coast respondents indicated that they would be more likely to sell hunting rights to their lands if their concerns were reduced.

Discussion

Forests provide substantial habitat for game and non-game wildlife species and are associated with the majority of our nation's remaining wetlands. However, these lands are under increasing pressures from agriculture, timber production, and development. Fee hunting provides monetary incentives to landowners for afforesting marginal agricultural land and protecting ecologically diverse forests and wetlands without the intervention of environmental regulations. Land-use planning by landowner cooperatives, economic development groups, and local communities can promote fee hunting on private lands as a viable alternative to development projects and agricultural production on marginal lands, thus protecting forests and emergent wetlands.

Respondents involved in fee hunting reported no appreciable problems associated with fee hunting on their land. In contrast, respondents not involved in fee hunting were very concerned about the potential problems, and this has deterred their participation. However, many non-fee-hunting respondents reported that if their concerns were reduced, they would be more inclined to sell hunting rights. Educational and outreach activities (e.g., Extension Service activities, Internet websites) are needed to inform landowners of the monetary returns associated with fee hunting, the wildlife management practices necessary to increase habitat quality, fee hunting marketing strategies designed to attract paying clients, and to reduce the perceived risks concerning

fee-hunting.

To diversify their income, landowners can combine activities that enhance fee-hunting opportunities with traditional land-use practices. For example, many forest management practices used to increase timber yields can also benefit wildlife populations (Rohweder et al. 2000). The supplemental income from hunting may encourage voluntary conservation and restoration of privately-owned lands. For example, because forestland is the dominant land use type in fee hunting arrangements, private landowners may elect to plant trees on marginal or abandoned agricultural land. Similarly, because ecologically sensitive lands, such as wetlands, typically provide excellent wildlife habitat, landowners engaged in fee hunting are likely to protect these lands, thereby reducing the need for governmental regulatory measures associated with environmental protection.

Future research should address why so few landowners sell hunting rights by examining landowner motivations, and the perceived and real barriers to fee hunting. Once these factors are better understood, outreach activities focusing on marketing strategies and wildlife habitat management practices can be directed toward private landowners to promote income diversification and ecological stewardship on private lands.

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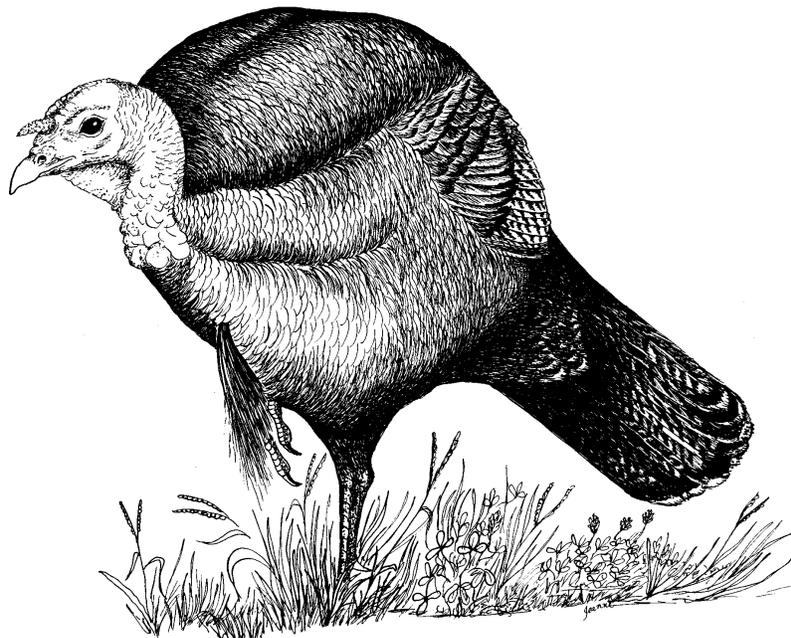


Table 1. Percentage of Mississippi respondents who allowed hunting on their land during the 1996-1997 and 1997-1998 hunting seasons.

Activity	State 1997 n = 653 %	Delta 1997 n = 567 %	State 1998 n = 555 %	Gulf Coast 1998 n = 508 %
Hunting Allowed	68	67	77	50
● Fee Hunting	11	14	14	8
● Hunting without a fee	64	60	68	44
✓ Family and friends	59	57	64	42
✓ General public by permission only	8	12	7	3
✓ General public without permission	4	1	3	2

Table 2. Average acreage owned in Mississippi by all survey respondents during the 1996-1997 and 1997-1998 hunting seasons.

Land Category	State 1997 n = 653	Delta 1997 n = 567	State 1998 n = 555	Gulf Coast 1998 n = 508
Forest	224	270	300	242
Agricultural	151	507	177	47
Other	23	54	22	23
Total	398	831	499	312
Wetlands ^a	23	158	28	25

^a May occur in all land categories.

Table 3. Average acreage owned in Mississippi by respondents engaged in fee hunting during the 1996-1997 and 1997-1998 hunting seasons.

Land Category	State 1997 n = 71	Delta 1997 n = 79	State 1998 n = 69	Gulf Coast 1998 n = 39
Forest	925	775	941	1,445
Agricultural	205	539	285	52
Other	75	179	32	93
Total	1,206	1,439	1,258	1,590
Wetlands ^a	62	381	63	42

^a May occur in all land categories.

Table 4. Average acreage owned in Mississippi by respondents not engaged in fee hunting during the 1996-1997 and 1997-1998 hunting seasons.

Land Category	State 1997 n = 582	Delta 1997 n = 488	State 1998 n = 486	Gulf Coast 1998 n = 469
Forest	138	188	208	141
Agricultural	144	502	161	46
Other	17	34	21	17
Total	299	723	391	204
Wetlands ^a	19	183	23	18

^a May occur in all land categories.

Table 5. Average acreage leased for hunting by Mississippi respondents involved in hunting leases during the 1996-1997 and 1997-1998 hunting seasons.

Region	% of total respondents	Acres owned	Acres leased %	Acres leased		
				Forested	Agricultural	Other
State 1997 (n = 56)	10	1,066	64	537	72	70
Delta 1997 (n = 60)	12	1,397	52	519	101	112
State 1998 (n = 64)	13	1,155	62	591	93	29
Gulf Coast 1998 (n = 38)	7	1,628	73	1,155	4	36

Table 6. Average acreage dedicated to permit hunting by Mississippi respondents involved in permit hunting during the 1996-1997 and 1997-1998 hunting seasons.

Region	% of total respondents	Permits sold	Acres owned	Acres permitted %	Acres permitted		
					Forested	Agricultural	Other
State 1997 (n = 10)	2	9	1,826	33	528	47	34
Delta 1997 (n = 9)	3	50	1,767	68	898	263	47
State 1998 (n = 12)	3	17	1,137	49	353	191	17
Gulf Coast 1998 (n = 2)	1	26	1,646	47	768	10	--

Table 7. Average acreage dedicated to hunting guides or outfitters by Mississippi respondents involved with guides or outfitters during the 1996-1997 and 1997-1998 hunting seasons.

Region	% of total respondents	Acres owned	Dedicated acres %	Acres leased		
				Forested	Agricultural	Other
State 1997 (n=2)	< 1	515	23	42	74	0
Delta 1997 (n=4)	< 1	3,340	51	1,349	272	75
State 1998 (n=0)	0	0	0	0	0	0
Gulf Coast 1998 (n=0)	0	0	0	0	0	0

Table 8. Game species featured in hunting leases by percentage of respondents involved in leasing during the 1996-1997 and 1997-1998 hunting seasons.

Region	Deer %	Waterfowl %	Turkey %	Quail %	Dove %	Other Game %
State 1997 (n = 56)	94	25	70	28	31	22
Delta 1997 (n = 60)	92	52	64	20	36	32
State 1998 (n = 64)	97	27	78	38	45	27
Gulf Coast 1998 (n = 39)	92	26	79	32	29	29

Table 9. Game species included in hunting permits by percentage of respondents involved in permit hunting during the 1996-1997 and 1997-1998 hunting seasons.

Region	Deer %	Waterfowl %	Turkey %	Quail %	Dove %	Other Game %
State 1997 (n = 10)	73	33	33	40	47	13
Delta 1997 (n = 9)	87	69	38	8	31	8
State 1998 (n = 12)	94	28	78	33	50	17
Gulf Coast 1998 (n = 2)	100	33	67	33	33	0

Expenditure Category	State 1997 n = 60	Delta 1997 n = 68	State 1998 n = 69	Gulf Coast 1998 n = 39
Manager	\$29	\$645	\$14	\$244
Consultant	0	0	0	37
Attorney	0	35	19	0
Accountant	39	71	11	15
Surveyor/appraiser	0	0	0	6
Liability insurance	47	146	41	135
Personal supervision	25	120	8	43
Road/trail construction	44	410	52	131
Trespass prevention/posting	13	14	5	17
Guest accommodations ^a	0	126	21	4
Purchasing released game	--	--	9	0
Other expenses	93	414	19	231
Total expenditures	\$290	\$1,981	\$199	\$863

^aConstruction costs were amortized over 27.5-year period.

Expenditure Category	State 1997 n = 60	Delta 1997 n = 68	State 1998 n = 69	Gulf Coast 1998 n = 39
Manager	\$0.03	\$0.72	\$0.02	\$0.20
Consultant	0.00	0.00	0.00	0.03
Attorney	0.00	0.04	0.02	0.00
Accountant	0.04	0.08	0.01	0.01
Surveyor/appraiser	0.00	0.02	0.00	0.01
Liability insurance	0.05	0.16	0.05	0.11
Personal supervision	0.03	0.13	0.01	0.03
Road/trail construction	0.05	0.46	0.06	0.11
Trespass prevention/posting	0.01	0.02	0.01	0.01
Guest accommodations ^a	0.00	0.14	0.03	0.01
Purchasing released game	NA	NA	0.01	0.00
Other expenses	0.10	0.46	0.02	0.19
Total expenditures	\$0.31	\$2.21	\$0.24	\$0.71

^aConstruction costs were amortized over 27.5-year period.

Table 12. Mean overhead expenditures by Mississippi respondents reporting expenditures during the 1996-1997 and 1997-1998 hunting seasons.				
Expenditure Category	State 1997 (n)	Delta 1997 (n)	State 1998 (n)	Gulf Coast 1998 (n)
Manager	\$583 (3)	\$8,778 (5)	\$32,225 (2)	\$1,900 (5)
Consultant	0 (0)	0 (0)	1,500 (1)	108 (4)
Attorney	0 (0)	392 (6)	331 (4)	0 (0)
Accountant	588 (4)	808 (6)	242 (3)	192 (3)
Surveyor/appraiser	0 (0)	0 (0)	0 (0)	250 (1)
Liability insurance	311 (9)	740 (13)	1,583 (6)	1,054 (5)
Personal supervision	750 (2)	2,038 (4)	290 (2)	415 (4)
Road/trail construction	441 (6)	2,532 (11)	900 (4)	850 (6)
Trespass prevention/posting	150 (5)	190 (5)	117 (3)	217 (3)
Guest accommodations ^a	0 (0)	1,714 (5)	968 (3)	80 (2)
Purchasing released game	NA	NA	1,700 (2)	0 (0)
Other expenses	505 (11)	2,820 (10)	1,433 (3)	1,499 (6)
Total expenditures	\$1,084 (16)	\$7,469 (18)	\$8,421 (11)	\$2,399 (14)

^aConstruction costs were amortized over 27.5-year period.

Table 13. Mean overhead expenditures per acre by Mississippi respondents reporting expenditures during the 1996-1997 and 1997-1998 hunting seasons.				
Expenditure Category	State 1997 (n)	Delta 1997 (n)	State 1998 (n)	Gulf Coast 1998 (n)
Manager	\$0.06 (3)	\$3.40 (5)	\$20.52 (2)	\$0.33 (5)
Consultant	0.00 (0)	0.00 (0)	1.32 (1)	0.28 (4)
Attorney	0.00 (0)	0.08 (6)	0.29 (4)	0.00 (0)
Accountant	0.16 (4)	0.19 (6)	0.20 (3)	0.04 (3)
Surveyor/appraiser	0.00 (0)	0.00 (0)	0.00 (0)	0.28 (1)
Liability insurance	0.13 (9)	0.30 (13)	1.09 (6)	0.34 (5)
Personal supervision	0.12 (2)	1.34 (4)	0.29 (2)	0.84 (4)
Road/trail construction	0.39 (6)	0.81 (11)	0.60 (4)	0.24 (6)
Trespass prevention/posting	0.12 (5)	0.09 (5)	0.07 (3)	0.04 (3)
Guest accommodations ^a	0.00 (0)	0.76 (5)	1.26 (3)	0.61 (2)
Purchasing released game	NA	NA	1.70 (2)	0.00 (0)
Other expenses	0.86 (11)	1.08 (10)	1.20 (3)	2.41 (6)
Total expenditures	\$0.66 (16)	\$3.61 (18)	\$5.49 (11)	\$0.92 (14)

^aConstruction costs were amortized over 27.5-year period.

Table 14. Mean wildlife management expenditures of Mississippi respondents engaged in wildlife management during the 1996-1997 and 1997-1998 hunting seasons.

Management Practice	State 1997 ^a (n)	Delta 1997 ^a (n)	State 1998 ^b (n)	Gulf Coast 1998 ^b (n)
Vegetation Management	\$1,125 (135)	\$1,020 (103)	\$1,244 (13)	\$346 (5)
Food and Cover	1,021 (134)	1,938 (110)	866 (11)	2,276 (6)
Stands and Blinds	542 (76)	738 (82)	1,258 (6)	840 (5)
Waterfowl Management	1,485 (15)	1,813 (52)	0 (0)	0 (0)
Total Expenditures	\$2,332 (151)	\$3,504 (135)	\$2,556 (13)	\$2,798 (7)

^a Includes wildlife management expenditures for fee hunting lands and lands for the personal use of landowners.

^b Includes wildlife management expenditures for fee hunting lands only.

Table 15. Mean wildlife management expenditures of Mississippi respondents engaged in fee hunting during the 1996-1997 and 1997-1998 hunting seasons.

Management Practice	State 1997 ^a n = 60	Delta 1997 ^a n = 68	State 1998 ^b n = 69	Gulf Coast 1998 ^b n = 39
Vegetation Management	\$745	\$398	\$164	\$44
Food and Cover	531	1,320	133	350
Stands and Blinds	121	309	104	108
Waterfowl Management	80	213	0	0
Total Expenditures	\$1,477	\$2,240	\$401	\$502

^a Includes wildlife management expenditures for fee hunting lands and lands for the personal use of landowners.

^b Includes wildlife management expenditures for fee hunting lands only.

Table 16. Mean wildlife management expenditures per acre of Mississippi respondents engaged in fee hunting during the 1996-1997 and 1997-1998 hunting seasons.

Management Practice	State 1997 ^a n = 60	Delta 1997 ^a n = 68	State 1998 ^b n = 69	Gulf Coast 1998 ^b n = 39
Vegetation Management	\$0.78	\$0.45	\$0.59	\$0.04
Food and Cover	0.55	1.50	0.40	0.29
Stands and Blinds	0.13	0.35	0.29	0.09
Waterfowl Management	0.08	0.24	0.00	0.00
Total Expenditures	\$1.54	\$2.54	\$1.28	\$0.42

^a Includes wildlife management expenditures for fee hunting lands and lands for the personal use of landowners.

^b Includes wildlife management expenditures for fee hunting lands only.

Payment Method	State 1997 (n)	Delta 1997 (n)	State 1998 (n)	Gulf Coast 1998 (n)
Leases	\$2,645 (56)	\$4,007 (60)	\$3,646 (64)	\$3,908 (38)
Permits	2,954 (10)	8,339 (9)	2,655 (12)	4,100 (2)
Outfitters/Guides	175 (1)	10,450 (4)	0 (0)	0 (0)
Total mean revenues	\$2,964 (60)	\$5,254 (68)	\$3,844 (69)	\$4,018 (39)

Payment Method	State 1997 (n)	Delta 1997 (n)	State 1998 (n)	Gulf Coast 1998 (n)
Leases	\$3.59 (56)	\$5.66 (60)	\$4.91 (64)	\$3.27 (38)
Permits	5.89 (10)	6.50 (9)	3.87 (12)	3.70 (2)
Outfitters/Guides	1.35 (1)	6.16 (4)	0.00 (0)	0.00 (0)
Total gross revenues	\$3.08 (60)	\$5.86 (68)	\$4.63 (69)	\$3.28 (39)

	State 1997 n = 60	Delta 1997 n = 68	State 1998 n = 69	Gulf Coast 1998 n = 39
Cash flows from hunting				
Gross Revenues	\$2,964	\$5,254	\$3,844	\$4,018
Overhead expenditures	290	1,981	199	863
Wildlife management expenditures	1,135	1,419	401	502
Net revenues ^a	\$1,539	\$1,845	\$3,244	\$2,655

^a Net revenues for 1997 surveys are understated because the corresponding wildlife management expenditures include expenditures on lands for the personal use of landowners.

Payment Method	State 1997 (n)	Delta 1997 (n)	State 1998 (n)	Gulf Coast 1998 (n)
Leases	\$2.85 (56)	\$3.10 (60)	\$4.59 (64)	\$2.29 (38)
Permits	2.44 (10)	0.96 (9)	1.91 (12)	1.80 (2)
Outfitters/Guides	0.00 (1)	4.91 (4)	0.00 (0)	0.00 (0)
Net Revenues ^a	\$1.60 (60)	\$1.95 (68)	\$3.91 (69)	\$2.17 (39)

^a Net revenues for 1997 surveys are understated because the corresponding wildlife management expenditures include expenditures on lands for the personal use of landowners.

Table 21. Mean ratings of problems associated with fee hunting reported by Mississippi respondents engaged in fee hunting during the 1997-1998 hunting season. Problems were rated on a scale from 1 (not a problem) to 5 (big problem).

Type of Problem	State 1998	Mean Rating	Gulf Coast 1998
Loss of land control	1.56		1.25
Loss of privacy	1.82		1.39
Accident liability	1.91		2.03
Damage to property	1.77		1.67
Overharvest of wildlife	1.37		1.54
Poaching and trespassing	2.24		2.18
Financial gain not worthwhile	1.71		1.79
Breach of contract by hunters	1.27		1.34
Other	1.59		1.25

Table 22. Mean ratings of problems that deterred respondents from engaging in fee hunting rated by Mississippi respondents not engaged in fee hunting during the 1997-1998 hunting season. Problems were rated on a scale from 1 (not important) to 5 (very important).

Type of Problem	State 1998	Mean Rating	Gulf Coast 1998
Loss of land control	4.19		4.27
Loss of privacy	4.26		4.41
Accident liability	4.34		4.49
Damage to property	4.29		4.30
Overharvest of wildlife	3.60		3.73
Poaching and trespassing	4.19		4.23
Financial gain not worthwhile	3.75		3.88
Inability to obtain bank credit for fee hunting operations	1.80		1.74
Not knowledgeable in fee hunting arrangements	2.10		2.04
Land tract too small	2.59		2.87
No demand for fee hunting	2.37		2.10
Do not want wildlife hunted	3.15		3.59
Other	4.23		4.47



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