

# Evaluating Mississippi's Hunting and Fishing Licenses and Fees

by

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### Abstract

Mississippi provides ample hunting and fishing opportunities. The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) promotes these activities, in part, by using revenues derived from licenses and fees. However, recent and anticipated budget cuts have led the MDWFP to assess and potentially adjust revenue sources. This study evaluated license fees and determined the potential effects fee changes would have on revenues. Relevant license fees from surrounding states were examined to see if there was a margin for adjustment. License fee adjustments were recommended for few resident licenses. A sensitivity analysis indicated revenue generation based on past sales trends and recommended price changes. Based on average sales, license recommendations could potentially generate \$16.3 million. When recommendations are followed, and average sales materialize, 26% of expenses are expected to be covered. If minimum and maximum expected sales materialize, then 23% and 28% of expenses will be covered, respectively. At worst, if sales drop to the minimum and fee recommendations are not followed, expected revenues would be \$12.7 million or 20% of total expenditures. Based on actual and projected revenues it appears, despite recent trends of sale increases for some licenses and decreases for others, that recommended adjustments should help cover near-term expenses.

**Key words:** fishing licenses, hunting licenses, license assessment, Mississippi, natural resource agencies

## **Introduction**

Mississippi, like many other states endowed with abundant natural resources, provides an ample supply of hunting, fishing, recreational, and other related opportunities for both residents and non-residents. The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) is the agency responsible for management of these activities. The MDWFP promotes these activities, in part, by using revenues from license, access, user, and other fees directed toward enhancing natural areas, wildlife, habitat, wildlife education, law enforcement activities, and recreational opportunities. Due to recent and anticipated future budget cuts, the MDWFP wanted to assess and potentially adjust their license fees. The fiscal situation was compounded by varying sportsman participation rates as well as complicated legislative issues (e.g., budget restrictions).

Historical data provided by the MDWFP revealed that total revenues generate approximately 40% of their budget. It was the agency's intent to maintain or improve upon this coverage in a climate of stagnating revenues from federal and state funding sources. Regardless of the budget situation, all fees set by the MDWFP need to be periodically reevaluated. Beyond inflationary pressures, hunting and fishing license fees should also be adjusted to reflect any change in value derived from using those licenses. Similar fees in surrounding states should be examined and compared. This is particularly important because non-resident sportsmen will travel long distances to pursue hunting and fishing activities. Several studies have examined hunting and fishing license sales in other states (Duda 1998, Sutton et al. 2001, Floyd and Lee 2002, Mehmood et al. 2003) and decreasing angler participation due to demographic change (Murdock et al. 1990, Murdock et al. 1996, Loomis and Ditton 1998). A loss of license and other sales and in-state activity days would affect revenues collected by the MDWFP and would also affect the state economy. Conversely, attractive non-resident licenses and fees would promote travel to the state, enhance overall revenues, and increase participant expenditures within the economy. In 2001, there were 586,000 anglers and 357,000 hunters in Mississippi who spent \$211 million and \$360 million, respectively (USDI and USDC 2002). A sizeable number of these sportsmen were non-residents.

According to Johnson (1991), entrance and user fees are a means of restoring recreation funding reduced by budget deficits. The problem then becomes one of adjusting licenses and other fees to retain resident hunters and anglers in the state, increase their activity rates, and also attract non-residents to hunting, fishing, recreational, and other related activities. At the same time, a viable revenue base must be maintained. An analysis of this problem needs to consider external events and historical trends such as the recent downward trend in the purchase of certain types of licenses and fees. Driver and Knopf (1976) and Fedler and Ditton (1994) indicated that if fishing license fees were to reflect the full extent of benefits associated with the resource, they would be much higher. However, Nicholson (1985) stated that recreationists would purchase licenses only if they believe the value of the activity was equal to or greater than the license cost. Johnson (1991) also stated the public was willing to pay these fees, and that to successfully charge fees, managers need to show how the fee will benefit the recreation area or resource.

Mehmood et al. (2003) determined that active Alabama hunters were in favor of modest fee increases.

Several factors have been determined to cause the downward trend in license sales. For example, Mehmood et al. (2003) determined that a decline in Alabama hunting license sales could be attributed to competing interests, aging of former hunters, and a decline in society's support for hunting. In a national study, Fedler and Sweezy (1990) determined that each dollar increase in the real price of a resident annual fishing license would result in a 4.7% decrease in sales.

Adjusting the value-side of the license or fee purchase may be both preferable and biologically feasible. As an example, enhancing the value of hunting licenses by manipulating bag limits, season lengths, and season scheduling may have an impact on participation and revenues. Teisl et al. (1999) determined that the best strategy for increasing revenues was to raise or lower prices based on recreationists' price responsiveness. More specifically, Teisl et al. (1999) predicted that raising resident license prices was the best strategy for increasing revenues.

The study's first objective was to evaluate resident and non-resident hunting and fishing license fees implemented by the MDWFP. The second objective was to determine the potential effects of license fee structure changes on near-term revenues to the MDWFP. A third objective was to provide evidence of the potential economic impacts associated with hunting and fishing activities.

## **Methods**

The MDWFP provided current and historical data that included license types, quantities sold, and associated revenues for each license or permit type. Data were provided for most license types for fiscal years 1983 to 2004. Initially, data were arranged by license type and then sorted by quantity sold and total revenue generated. The analyses focused on the top quantity and revenue producers. A brief information search was conducted to identify characteristics and prices of all relevant licenses and fees in surrounding states (i.e., Alabama, Arkansas, Louisiana, and Tennessee) that were similar in nature to Mississippi's. Similar state-to-state licenses and fees were then compared to see if there was a margin for adjustment of either the fee charged or value offered for a specific activity in Mississippi. In general, comparisons were made between Mississippi's fees and adjacent state fees to determine if prices should be increased, decreased, or remain the same. A sensitivity analysis was performed to indicate revenue generation based on past sales trends and recommended price changes. Projected increases or decreases in license and fee sales were based on trends developed from actual quantities sold from fiscal years 1997 to 2004. This was done because, before 1997, several license types were eliminated or combined to form current license types. License fee adjustments were also recommended based on quantities sold and price differentials between purchased items. Revenue projections were examined where quantities sold would remain unchanged from fiscal year 2004 or approach the minimum, maximum, or average

quantities sold from fiscal year 1997 to 2004. Estimates on the overall effects on MDWFP revenues were made from proposed changes in the collective fee structure. Finally, an analysis of the economic impact of license and fee purchases was conducted using Impact Analysis for Planning (IMPLAN).

## Results

The analysis attempted to gauge revenues that could be obtained by adjusting license prices, while also attempting to determine reasonable trends for future purchases. The average, maximum, and minimum annual changes in resident and non-resident license sales from fiscal years 1997 to 2004 are reported in Tables 1 and 2. Weighted average resident hunting and

Table 1. Average, maximum, and minimum annual changes in Mississippi's resident license sales during fiscal years 1997 to 2004.

<i>Resident license type</i>	<b>Average change (%)</b>	<b>Maximum change (%)</b>	<b>Minimum change (%)</b>
Sportsman	4.80	7.17	1.81
All Game Hunting/Freshwater Fishing	-6.23	-3.65	-9.81
Archery/Primitive Weapon	-14.10	18.81	-29.73
Small Game Hunting/Freshwater Fishing	-5.44	-0.35	-9.45
Freshwater Fishing	0.05	5.43	-4.19
3-Day Freshwater Fishing	3.34	25.44	-16.12
Commercial Fishing	0.28	30.35	-19.76
State Trapper	-1.31	15.87	-19.95
Fur Dealer	4.21	58.33	-39.13
<b>Overall change</b>	<b>-0.48</b>	<b>1.52</b>	<b>-3.87</b>

Table 2. Average, maximum, and minimum annual changes in Mississippi's non-resident license sales during fiscal years 1997 to 2004.

<i>Non-resident license type</i>	<b>Average change (%)</b>	<b>Maximum change (%)</b>	<b>Minimum change (%)</b>
Freshwater Fishing	1.82	15.33	-7.84
1-Day Freshwater Fishing <sup>a</sup>	43.88	43.88	43.88
3-Day Freshwater Fishing	-14.45	6.23	-49.86
All Game Hunting	-0.48	6.62	-19.82
Youth All Game Hunting	3.69	15.86	-5.41
7-Day All Game Hunting	5.90	20.41	-9.43
Youth 7-Day All Game Hunting	10.70	43.11	-8.79
Small Game Hunting	4.91	12.53	-1.12
7-Day Small Game Hunting	2.91	12.96	-5.84
Archery/Primitive Weapon	0.79	11.22	-23.80
3-Day Archery/Primitive Weapon <sup>a</sup>	204.44	204.44	204.44
Shooting Preserve	-1.15	32.78	-47.20
Commercial Fishing	6.96	37.50	-19.23
State Trapper	51.71	171.43	-12.31
Fur Dealer	0.48	100.00	-55.56
<b>Overall change</b>	<b>0.73</b>	<b>1.97</b>	<b>-2.65</b>

<sup>a</sup>Based on data during fiscal years 2003 and 2004.

fishing license average sales during this time period were -0.48% per year, whereas the weighted average annual ranged from -3.87 to 1.52%. Individually, the largest average annual decrease was for the Archery/Primitive Weapon license (-14.10%). The greatest annual average increase was for the Sportsman license (4.80%) which was also the largest resident revenue generator. Non-resident hunting and fishing license sales during this time period had a weighted average average of 0.73% and a weighted average annual range from -2.65 to 1.97%. Individually, the largest annual average decrease was for the 3-Day Freshwater Fishing license (-14.45%). The greatest annual average increase since 1997 was for the State Trapper license (51.71%). In total, all license sales averaged a 0.07% increase, with the annual average ranging from -5.25% to 4.35%. Total resident revenues increased 3.4% in the past 5 years and 6.5% during fiscal years 1997 to 2004 even though number of sales decreased by an annual average of 0.48%. Total non-resident revenue increased 27.3% in the past 5 years and by 43.9% during 1997 to 2004 even though sales only marginally increased by the weighted average annual average of 0.73%.

License fee recommendations were made by considering past changes, sales trends, and by examining similar fees charged in other states. Also taken into consideration was the fee for the Sportsman license relative to its components; the All Game Hunting/Freshwater Fishing license and the Archery/Primitive Weapon license. State Trapper and Fur Dealer licenses were left unchanged because any recommended changes would result in minimal changes in revenues. All recommended price changes were for

the resident licenses in Mississippi and are reported in Table 3. Non-resident fees were unchanged because these fees were last increased in 2002.

The sensitivity analysis for resident, non-resident, and miscellaneous license fees was based on changes to 2004 resident license prices and fees and changes in license sales from 2004 and was used to project revenues. For resident licenses, the recommended scenarios of zero, average, minimum, and maximum changes in license sales would lead to revenues of \$7.48 million, \$7.56 million, \$7.28 million, and \$7.81 million, respectively. For non-resident licenses, the same scenarios would result in revenues of \$7.66 million, \$8.04 million, \$6.70 million, and \$8.78 million, respectively. For miscellaneous licenses, the same scenarios would result in revenues of \$0.73 million, \$0.74 million, \$0.44 million, and \$1.09 million, respectively. Table 4 illustrates the total revenues for fiscal year 2006 due to changes in resident license fees and license sale assumptions.

The total annual economic impact of hunting and fishing license purchases to the state of Mississippi ranged from \$21.3 to 26.6 million if no changes were made to the fee schedule. However, if the recommended fee changes were implemented, the annual economic impact would range from \$24.2 to 29.6 million, an increase of approximately \$3 million. These amounts only reflect revenues generated by license sales and do not account for impacts of all other outdoor recreationists' expenditures in the state.

Table 3. Newly recommended prices for Mississippi's resident license fees for fiscal year 2006 based on past changes, sales trends, and by examining other states' similar fees.

<b>License type</b>	<b>2004 Fees (\$)</b>	<b>Recommended changes (\$)</b>	<b>New license fees (\$)</b>
Sportsman	32	8	40
All Game Hunting/Freshwater Fishing	17	8	25
Archery/Primitive Weapon	14	6	20
Small Game Hunting/Freshwater Fishing	13	3	16
Freshwater Fishing	8	2	10
3-Day Freshwater Fishing	3	3	6
Commercial Fishing	30	20	50
State Trapper	25	0	25
Fur Dealer	50	0	50

Table 4. Hunting and fishing license fee revenue projections for the Mississippi Department of Wildlife, Fisheries, and Parks for fiscal year 2006 based on changes in resident license fees and license sale assumptions.

<b>Resident and non-resident license fee changes</b>	<b>Sales same as 2004</b>	<b>Average expected sales<sup>a</sup></b>	<b>Minimum expected sales<sup>a</sup></b>	<b>Maximum expected sales<sup>a</sup></b>
No change from 2004 fees	\$14,097,997	\$14,568,170	\$12,718,408	\$15,840,800
Recommended fee changes from 2004	\$15,868,207	\$16,339,787	\$14,418,978	\$17,678,665

<sup>a</sup>Based on changes in license fee sales during fiscal years 1997 to 2004.

## Discussion

Revenue and constituent support are both important to the MDWFP. Therefore, the data were analyzed with both in mind. In most cases, directives were based on historical data and trends from for the past eight fiscal years where license types were consistent. More sophisticated analyses were limited by the fact that a key variable, license or fee prices, have rarely changed over this period.

One trend that stood out was that for almost all license and fee categories, total sales, on average, decreased over the 1997 to 2004 period. This downward trend, the fact that resident license fees were last changed in 1994, and that recent price increases in 2002 for non-resident licenses resulted in a small number of price increase recommendations. These price recommendations need to be accepted in total because they were increased to favor the key revenue generator license, the Sportsman license, versus encouraging the purchase of specific hunting or fishing licenses only.

Based on actual and projected revenue requirements for the MDWFP it appeared that, despite recent increases for some license types and decreases for others, price increases recently instituted for non-residents in 2002, recommended license fee adjustments should be sufficient to cover a portion of the agency's near-term expenses (\$64 million in 2006). In the worst scenario, if sales were to drop to the minimum expected and resident fee recommendations were not followed, expected revenues would be \$12,718,408. In this situation, hunting and fishing license revenues would cover 20% of expenditures. If resident fee recommendations are followed and average expected sales materialize, 26% of expenditures are expected to be covered. If minimum and maximum expected sales materialize, then 23% and 28% of expenditures will be covered, respectively. In addition, the recommendations and projections would still sustain a sizeable direct economic impact to the state from licenses and fees. More importantly, while it is known that licenses and fees are a small portion of sportsman expenditures (USDI and USDC 2002), the economic impacts attributed to the total hunting and fishing experience are much larger. Therefore, licenses and fees need to be reasonable and justified because sportsmen will focus on these identifiable expenses and may be influenced to go elsewhere, resulting in lower overall economic impacts within the state.

## **Conclusions**

A number of recommendations were made from this study. As previously noted, one was to increase certain resident licenses fees to match fees charged by surrounding states. Another recommendation was offered to generate additional revenue. Several states in the southern region are charging a fee or requiring a permit (generally ranging from \$10 to \$26) for individuals who hunt on state wildlife management areas (WMAs). For example, both Alabama and Louisiana charge \$15. Mississippi was the only state in the region that does not charge for using public WMAs. In fiscal year 2004, the MDWFP estimated a total of 167,853 activity days were spent on Mississippi's WMAs. Assuming that the average sportsman spent 8 activity days that year hunting on a WMA, this represented approximately 20,980 individuals who would need to purchase a WMA permit. At a permit cost of \$15, this would represent an additional \$314,700 in revenue for the MDWFP. It is possible this amount could be larger. If the number of individuals using Mississippi's WMAs and corresponding activity days were known with greater certainty, expected increases in revenues could be estimated with greater accuracy.

There were several other areas requiring further research. First, the MDWFP needs to examine how changes in bag limits and season length may increase revenues by species type. Second, there is a need to survey the constituency to assess their propensity, willingness-to-pay, willingness to purchase certain license fees or permits at various prices, based on value received. Ready et al. (2005) determined that projections based on stated behavior (e.g., in a survey) was better than projections from revealed behavior (e.g., historical license sales) at predicting resident fishing license sales in Pennsylvania. Unfortunately, due to time constraints such a survey could not be accomplished. Administrative fees now attached to the purchase of licenses and other fees could also have been incorporated into the analysis. For the consumer, this is part of the "price" of participating in an activity.

Finally, any change in license fees or permits should be instituted with a marketing strategy to provide information to current and potential sportsmen and recreationists on the benefits derived from individual licenses, fees, and permits as well as the programs that benefit from these revenues. As in recreation studies we previously alluded to, recreationists' objections are minimized, and support often garnered, when participants see the benefits of fees they are being asked to pay.

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