

Directed Research Program Objective 7**Economic impact of wildlife and fisheries resources in Mississippi**

Investigators: W. Daryl Jones, Wildlife and Fisheries; Stephen C. Grado, Changyou Sun, Forestry; David Parvin, formerly Agricultural Economics (retired)

Project Goal:

Compare and evaluate potential and current economic value of natural resources in Mississippi to attract more attention to the issue, facilitate the enacting of policies, and increase the State and ultimately regional economic growth.

Project Objectives:

Evaluate potential economics compared to current economic value of natural resources within Mississippi.

Synopsis of research activities per objective:

To evaluate potential economics of enterprises and activities relative to the current economic value of natural resources within Mississippi an assessment is needed on the economic impacts of major activities. These are primarily hunting, fishing, and wildlife watching. This initial step involves determining the expenditures related to these activities, the number of individuals and days partaking in each activity, and subsequently determining an economic impact for a given year. Since the IMPLAN model, which is a linear model, is being used to determine economic impacts for this project, projections on potential economic impacts from increases or decreases in participation can only be made within a narrow, but reasonable range for each activity.

A current economic model of the State was built using the most up-to-date IMPLAN software (Version 2.0.1025) and the latest database for the State economy (2006). The model was used to determine economic impacts in 2008 dollars of hunting, fishing, and wildlife-watching in Mississippi by residents and nonresidents to the State in 2006. Expenditures and activity days for hunting, fishing, and wildlife watching have been derived by adapting data from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. This is the latest comprehensive database, although a specific 2006 database is due to be published shortly for Mississippi only and will refine the analysis.

Additionally, information on the numbers, activities, and revenue generation of enterprises operated by Mississippi landowners is presently being collected from past and current landowner survey studies conducted at MSU and secondary data sources. A large component of the economic valuation of the natural resource base requires looking at the economic impacts of consumptive and non-consumptive recreational activities. These estimates are being compiled through complimentary research currently being completed under Objective 4.

A natural resource enterprise web site that allows landowners to advertise and market their recreational properties to potential outdoor clients has been developed. Through the web site, user groups (i.e., hunters, wildlife watchers) can view geospatial maps of land coverages of private lands, planted crops and forest coverages, wildlife management areas, and national wildlife refuges as candidate areas for outdoor recreation. Outdoor enthusiasts can submit an online request for information and leasing options available on recreational lands owned by landowners. Landowners are given these inquiries and may contact these individuals to discuss leasing options on available recreational properties. This web site was designed for Mississippi and is being adapted to Arkansas, Louisiana, Alabama, Tennessee, and Georgia.

Additionally, a survey of rural appraisers in Mississippi has been conducted to ascertain recent rural land sales influenced by outdoor recreation. Study findings are articulated below. Thirty agricultural producers were inventoried in the Mississippi and Arkansas Delta region on their willingness to serve as demonstration sites for natural resource enterprises integrated with their farming operations. These individuals have provided information on their revenue collections, acreages committed, and hunter leasing arrangements associated with their fee hunting and natural resource enterprises operations.



Directed Research Program Objective 7**Economic impact of wildlife and fisheries resources in Mississippi (continued)**

Investigators: W. Daryl Jones, Wildlife and Fisheries; Stephen C. Grado, Changyou Sun, Forestry; David Parvin, formerly Agricultural Economics (retired)

**Significant findings/results per objective to date:**

In 2006, 508,000 resident and non-resident freshwater anglers in Mississippi spent 7,095,000 activity days in pursuit of various game species. Their trip-related and equipment expenditures totaled \$413,922,300 (2006 dollars) leading to an economic impact for the state of \$690,161,178 (2008 dollars), which supported 12,176 full- and part-time jobs. This resulted in a multiplier effect of 1.58, meaning that for each dollar expended in the state for fishing, there was a \$1.58 of economic impact generated. In 2006, 304,000 resident and non-resident hunters in Mississippi spent 6,835,000 activity days in pursuit of various game species. Their trip-related and equipment expenditures totaled \$711,523,500 (2006 dollars) leading to an economic impact for the state of \$1,203,742,401 (2008 dollars), which

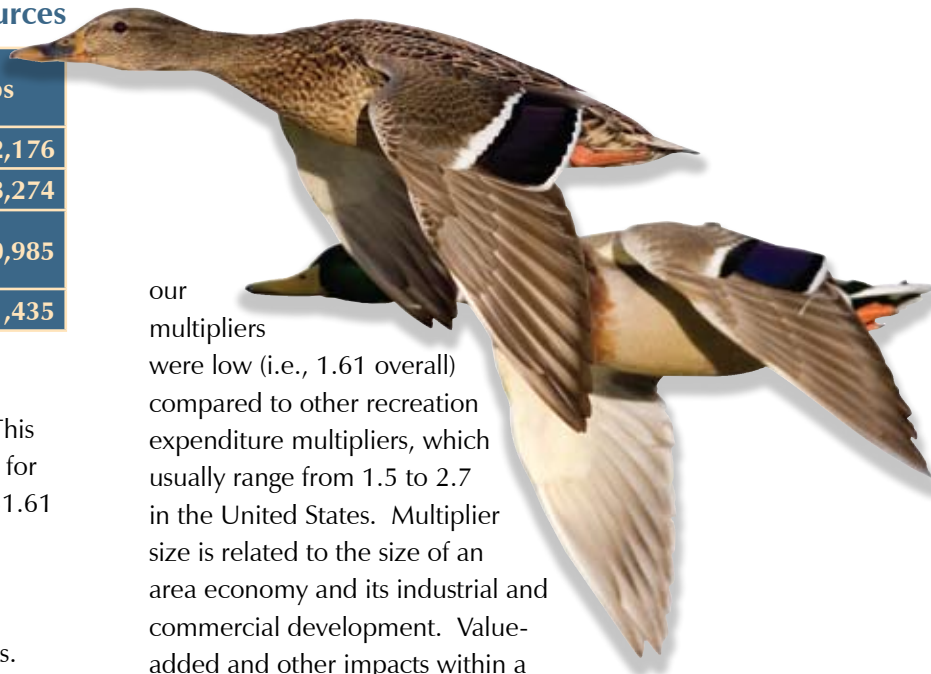
supported 38,274 full- and part-time jobs. This resulted in a multiplier effect of 1.61, meaning that for each dollar expended in the state for hunting, there was a \$1.61 of economic impact generated. In 2006, 731,000 resident and non-resident wildlife-watchers in Mississippi spent 1,302,000 activity days away from home (at-home not reported in activity days) in pursuit and maintenance of various wildlife species. Their trip-related and equipment expenditures totaling \$464,799,040 (2006 dollars) leading to an economic impact for the state of \$791,337,311 (2008 dollars), which supported 20,985 full- and part-time jobs. This resulted in a multiplier effect of 1.62, meaning that for each dollar expended in the State for hunting, fishing, and wildlife watching, there was a \$1.62 of economic impact generated. For all three activities, the total economic

Economic Impacts of Wildlife and Fisheries Resources

Activity	Number of participants	Economic Impact	Jobs
Fishing	508,000	\$690,161,178	12,176
Hunting	304,000	\$1,203,742,401	38,274
Wildlife-Watching	731,000	\$791,337,311	20,985
Total		\$2,685,240,891	71,435

impact for the state for 2006 was \$2,685,240,891 (2008 dollars), which supported 71,435 full- and part-time jobs. This resulted in an overall multiplier effect of 1.61, meaning that for each dollar expended in the state for hunting, there was a \$1.61 of economic impact generated.

Two aspects of the study are in need of interpretation: 1) economic impacts of participant residency and 2) multipliers. For residents, this can be viewed, in part, as legitimate economic impacts and, in part, dollars used to support the economy due solely to hunting, fishing, and wildlife watching opportunities in the state. Hypothetically, if these opportunities did not exist some residents would spend a portion of these dollars on other activities in the state; however, some would choose to pursue activities outside the state, thus resulting in a loss to the state economy. For non-residents, economic impacts clearly represent an influx of new dollars to the economy. The multipliers derived in this project illustrate the state economy has the capacity to develop goods and services to accommodate anglers, hunters, and wildlife-watchers. To illustrate this point,



our multipliers were low (i.e., 1.61 overall) compared to other recreation expenditure multipliers, which usually range from 1.5 to 2.7 in the United States. Multiplier size is related to the size of an area economy and its industrial and commercial development. Value-added and other impacts within a region have the potential to increase in unison with increases in these factors and, more than likely, a smaller proportion of expenditures would then be purchased outside the region. Therefore, economy size and industrial and commercial development will lead to less dollar outflows (and larger multipliers) and more impacts for a given economy.

Research findings from 2002-2005 rural lands sales which were influenced by wildlife-related recreation yielded the following results. Data from records (N = 100) of land sales (13,559 ha) developed and maintained by the Mississippi Chapter of the American Society of Farm Managers and Rural

Directed Research Program Objective 7**Economic impact of wildlife and fisheries resources in Mississippi (continued)**

Investigators: W. Daryl Jones, Wildlife and Fisheries; Stephen C. Grado, Changyou Sun, Forestry; David Parvin, formerly Agricultural Economics (retired)

Appraisers were collected. Most land parcels were located near or in the Mississippi River Delta region with dominant cover types of agricultural crops (43%) or forest cover (52%). Important recreational uses included hunting (100%), off road vehicles access (60%), horseback riding (45%), wildlife watching (44%), ecotourism (43%), and fishing (16%). Featured species associated with recreation on these properties were white-tailed deer (*Odocoileus virginianus*; 93%), rabbits (*Sylvilagus* spp.; 65%), wild turkey (*Meleagris gallopavo*; 56%), waterfowl (48%), squirrels (*Sciurus* spp.; 38%), mourning dove (*Zenaida macroura*; 15%), northern bobwhite quail (*Colinus virginianus*; 12%), and other (< 10%). Total sales value of all properties with consideration of recreational opportunities was \$41,675,171.00 or \$3,073.62/ha. Appraisers reported that the sales value of the same properties without recreational uses would have been \$30,709,679.00 or \$2,264.89/ha. Thus, recreational uses contributed an average increase of \$808.73/ha or an increase of 36% in property value. Property characteristics that influenced sales price were hectares of pine-hardwood forests, bottomland hardwood forests, agricultural row crops, wildlife supplemental food plots, and rabbit. It is clear that wildlife and fish recreation contribute to sales values of Mississippi properties. Wildlife professionals should work cooperatively with appraisers and economists to attain this type of information for use in impact

assessment and planning of land and water use. Conservation and management of wildlife and fish resources can produce quantifiable increases in land values and sales proceeds. This consideration of value added by outdoor recreation is part of a cost-effective approach to sustainable economic development in Mississippi. This inventory is being expanded in 2007 to encompass rural land sales in the entire state.

Similarly, findings of Delta farmers serving as potential demonstration sites reveal that most of these individuals hunt their own lands and lease most of their properties for hunting. Lease rates ranged from \$2.00 to \$16.00 per acre. Flooded acres for waterfowl hunting leased for \$1,000 to \$5,000 per season. Four of these farmers operated outfitting services providing lodging, meals, and guided hunts. The fee for guided hunts for deer and waterfowl ranged from \$100 to \$500 per day.

Applications or broader impacts of significant findings, including economic impacts or projected impacts:

For economic impact related information see the progress report for *Objective 4: Description and Assessment of the Economic and Biological Feasibilities for Alternative Wildlife and Fisheries*



Based Enterprises. Rural land values have been found to be increased dramatically by use of these properties for outdoor recreation. It is speculated that this recreational land valuation trend will continue to influence the sales and appraised values of Mississippi rural properties. Presently, landowners are not taxed on land appreciation due to recreational lease values. Thus, wildlife recreation adds financial value to property values and diversifies income to farmers and producers.

Project success relative to original objectives:

The project was successful in meeting all of the objectives.

Fund Leveraging	
Mississippi Department of Environmental Quality	\$75,000
US Environmental Protection Agency Wetlands Division	\$196,000
US Fish and Wildlife Service	\$56,859