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# ECONOMIC IMPACT OF RECREATIONAL FISHING IN ALABAMA

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## Abstract

Anglers' direct mail survey data were used with IMPLAN (Impact Analysis for Planning), input-output system, to estimate the economic impact of recreational fishing in Alabama and the Alabama Black Belt. Separate economic impacts are analyzed for the Black Belt and the State; and direct, indirect, and induced economic impacts were estimated for government revenues, income, and employment. Possible increases in these impacts were also estimated for hypothetically improved recreational fishing sites, using the 'ideal' hypothetical site characteristics. The results showed a direct total value added impact of \$102.5m; indirect impact of \$24.7m, and an induced impact of \$8.3m, which all add up to a total impact of \$135.5m in total value added to the State. The total labor impact for the state is 4,442 jobs created as a result of anglers expenditures. Therefore, these results are expected to encourage the improvement of water resources for recreational fishing purposes.

**Keywords:** Anglers, IMPLAN, Recreation, Fishing

## Introduction

The Black Belt, as described by Raper (1936), is as a region with over 50% black (African American) population, historically home to the richest soil, and the poorest people in the United States. The Southern Black Belt is one of the most economically depressed regions in the United States and it is characterized by persistent poverty, poor employment, low incomes, low education, poor health, high infant mortality, and adult dependence (Reeves, 2013; Wimberley et al., 1997; Wimberley et al., 1994; Baharanyi et al., 1993).

Economic development in the Black Belt region has been a primary focus of policy makers at both the national and local levels; development of recreational opportunities, as part of a goal of promoting ecotourism in the area, has been under particular consideration (Ojumu, 2009). Clark (2011) stated that the Black Belt area lacked the workforce necessary to support industry, and therefore, should aim to become a quality destination for outdoor recreation. The report stated that Alabama has the potential for 12 months of fishing. The report further explained that the potential ecotourism dollars that flow through the Black Belt could have greater multiples of impact than metro areas. In the Alabama Black Belt, there are a number of existing water reservoirs and other public fishing venues, such as county lakes in which current fish populations can be enhanced via aquacultural management practices in order to attract more recreational fishermen. Additionally, many farm ponds are currently either under-utilized or not being utilized, suggesting that these could be converted to recreational fishing venues. Further, the Alabama Tourism Department has placed the Alabama Black Belt in the River Heritage and the Gulf Coast regions, where water resources are readily available for recreational fishing activities (Outdoor Alabama, 2009).

In order to examine the economic impact of recreational fishing in Alabama and its Black Belt, this paper covers a full economic analysis based on anglers' expenditures, combined with a model of regional economic impacts from IMPLAN. The results from this study aims at providing economic information that could be pertinent to formulating policy decisions. This information could help to maximize the use of existing water bodies in the economically depressed Alabama Black Belt.

The purpose of this study, therefore, was to examine the potential economic impacts that natural fisheries and private sport fishing opportunities have in the economically depressed Black Belt region of Alabama. The objective was to embark on an economic analysis based on anglers' expenditures, combined with a model of regional economic impacts from IMPLAN. The bodies of fishing water in the Black Belt region of the state are of particular interest. The study will compare the revenues of the region to the entire state, showing the potential revenue gap. This will allow policy makers to address possible ways to enhance the bodies of water currently being used in the Black Belt for better economic gains. It will also encourage policy makers to harness idle bodies of water for new economic gains in the region.

Figure 1(A, B, and C) show three maps of Alabama, where the counties highlighted in red or yellow in A and B are traditional Black Belt counties (Center for Business and Economic Research, 2008). It also shows that a large part of the Black Belt is in the River Heritage of the state, Figure 1C. Therefore, creating ventures related to outdoor leisure and nature is an opportunity that can be realized to alleviate poverty and improve quality of life in the region. Establishing nature based enterprises on family farms and other private land could provide multiple benefits, which include family incomes diversification, retaining land ownerships, better conservation and stewardship of the land, improved watershed qualities, and sustainable rural development (Jones et al, 2008; Schroeder, 2004; Woods, 2000).

### **Literature Review**

This section examines different literature related to recreational fishing. Particularly, the methods of identifying how anglers value recreational fishing site qualities are examined. This section also examines studies that measure the demand for recreational fishing and how the demand for recreation fishing could enhance economic activities in various communities. Bannear et al., for example, (2004) used revealed preferences to infer the environmental benefits evidenced from recreational fishing in United States. They used panel data to determine license demand function that was estimated with instrumental variable procedure to allow for endogeneity of administered prices. It was revealed that there is variation in the value of recreational fishing across United States, and the use of benefit estimates may result in substantial bias in regional analysis.

Hanson et al. (2004) in a study on coastal Alabama recreational live bait, reported recreational fishing as a major industry, which as a sport complements a wide array of activities associated with the expansion of U.S. tourism. They identified recreational saltwater fishing as an integral part of the coastal Alabama economy as evidenced by the increase in the sale of fishing licenses since 1995.

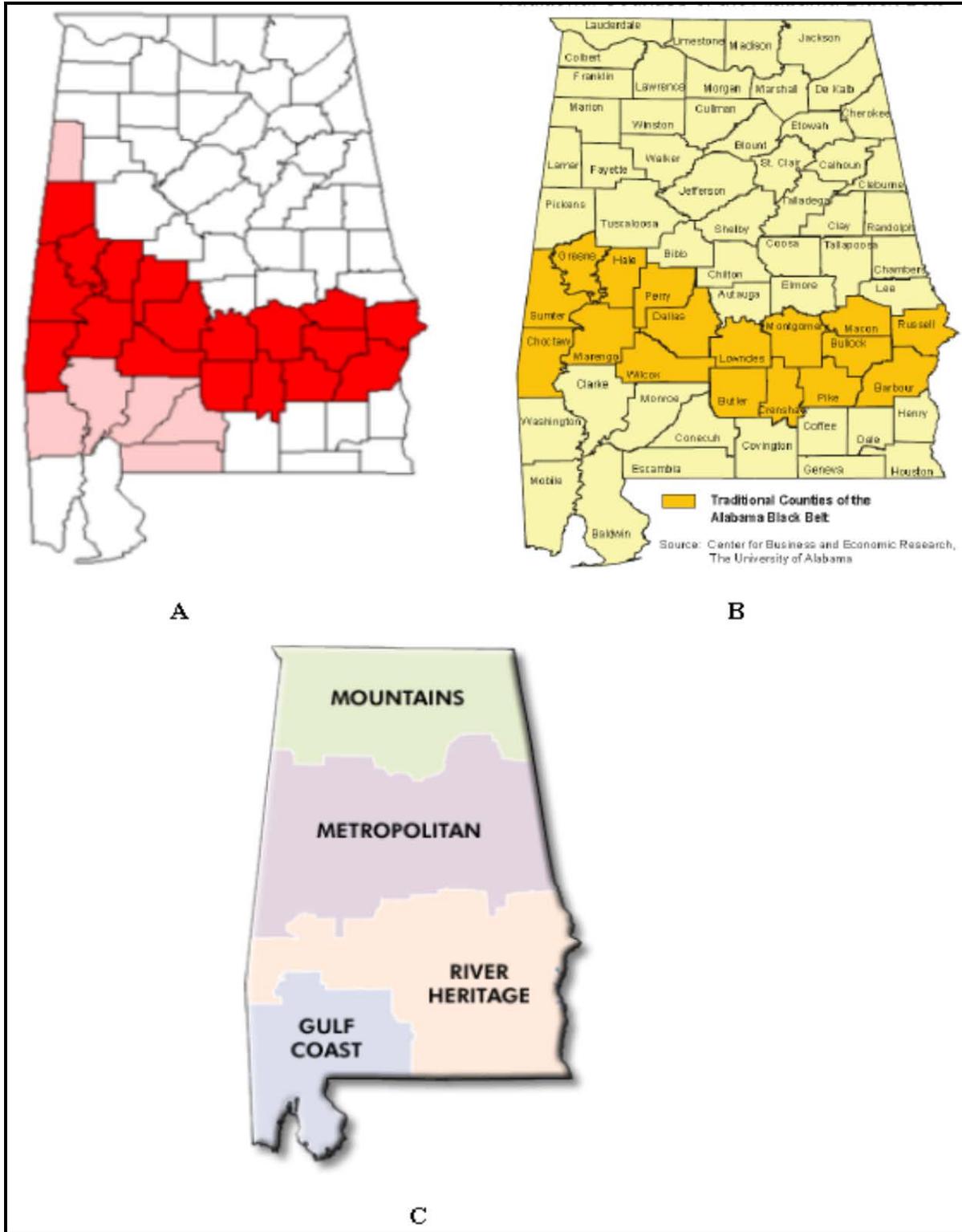


Figure 1. Maps of Alabama's Black Belt

Ditton et al. (2002), writing on recreational fishing as tourism, explained that apart from fishing being a recreation activity for residents in each state, it is also a form of tourism that makes

anglers cross to other states. Using data from the 1996 National Survey of Fishing, Hunting, and Wildlife Associated Recreation, they reported that the states are pushing to promote tourism, including recreational fishing, in the name of economic development. They concluded that fishing site managers need a higher level of awareness of fishing tourism and develop effective partnerships with state and local tourism promotion organizations.

Clonts et al. (1998) examined recreational fishing in Alabama's public waters. Using 403 surveys, an input-output simulation plan was used to estimate the economic impact of recreational fishing in Alabama. Their study showed that the recreational fishing industry in the state contributed direct spending of \$1.3 billion by licensed anglers to the economy and also created jobs in the state. This expenditure sustained about 36,539 workers with annual income of \$600 million.

Lupi et al. (1997) estimated the demand for recreational angling in Michigan using the travel-cost model. Using a four level nested logit model on one season of angler data, they showed that travel cost method establishes a relationship between recreational use and cost and characteristics of the sites. They also emphasized that the method is only as good as the statistical link between the between the site quality characteristics and the travel cost method demand for trips to the site.

Gardner and Mendelsohn (1984) applied the hedonic travel cost method to value the steelhead fish density in Washington State streams. The model revealed how users were willing to pay for site characteristics of recreation sites. Using a regression analysis, he estimated the prices of recreation attributes by regressing travel costs on characteristics of the recreation sites. The demand for the site characteristics was assessed by comparing site selection of the users when faced with different prices.

Hite (2005) examined the potential economic impact of developing the Black Belt Prairie National Grassland (BPNG), as an ecotourism destination in the Alabama Black Belt. The author explained that the project would directly and indirectly increase economic activities in the Black Belt, and attract other tourism infrastructures such as private recreational fishing areas. Using existing studies and reports, the study showed that developing the grassland would increase jobs in the retail and service areas of the Black Belt region, which would in turn impact other sectors in this economically depressed region. Hodges et al. (2005) also measured the impacts of Florida citrus industries in 2003-2004 seasons. Using the IMPLAN software, they showed how the expenditures invested in the citrus industry affects several other sectors of the Florida economy to increase economic activity in the state.

While several studies have used travel cost models or willingness to pay methods to assess demand and consumer surplus to recreation sites, this study used IMPLAN, an acronym for "Impact Analysis for Planning." IMPLAN is an economic impact and social accounting software package. It is an input-output modeling system that focuses one or more factors on another factor, the factor of concern. In this study, the system focused on the economic impacts of angler expenses on the economy of recreation sites.

## Methods

There are studies that have examined economic impacts of other activities on the economy of Alabama. This study focuses on the economic impact of recreational fishing, and the potential to have an increased economic impact in Alabama using IMPLAN (Impact Analysis for Planning, 2009). The study area covers the whole state of Alabama. This is because the state has tremendous recreational fishing resources. The public water of the state covers more than one million surface acres with additional 150,000 acres of private bodies of water. The Division of Wildlife and Freshwater Fisheries manages 23 lakes, 77 miles of perennial rivers, streams and the delta in Mobile; the Department of Conservation and Natural Resources manages 38 lakes, and the State Park Division has four large reservoirs and 14 lakes (Outdoor Alabama - Alabama Department of Conservation and Natural Resources, 2009).

Table 1 shows the demographics of Alabama and the Alabama Black Belt using IMPLAN, 2009 data. It shows the ratios of several indicators for the Alabama Black Belt to the State of Alabama; these are expressed for total area (square miles), population, number of industries, employment, number of households (HH), income per HH, and total personal income. The Table shows that there is a big disparity in the HH income and the personal income ratios. This huge disparity supports the finding of Wimberly et al. (1997); Wimberly et al., (1993), and Baharanyi et al. (1993) of the high adult dependency in the Black Belt.

Table 1. Demographics of Alabama and the Black Belt

Category	Black Belt	State	Ratio BB/State (%)
Area (sq. Miles)	18,419.00	50,752.00	36.29
Population('000)	689,924.00	4,503,726.00	15.32
Number of Industries	306.00	464.00	65.95
Employment ('000)	345,727.00	2,345,653.00	14.74
Household (HH)('000)	318,891.00	2,035,107.00	15.67
Income per HH (\$'000)	52,321.00	58,657.00	89.20
Total Personal Income (\$ '000)	16,684,710,000.00	119,373,000,000.00	13.98

## Economic Impact

This section provides general information to aid in understanding the workings of a local economy, which is the framework for economic impact analysis. This is followed by a more specific discussion of the IMPLAN database, software, and applications. The IMPLAN model reflects the amount of additional regional economic values that can be expected from a given activity (Hodges and Mulkey, 2005). These values are reflected by revenues that are brought into the area and which filter through the local economy. IMPLAN is an input-output model that uses economic multipliers to estimate the effects of changes in final demand for one or more industries in the region of interest. These multipliers measure the direct, indirect and induced effects of new expenditures on changes in output, income, and employment. The direct effect is the initial change in the sector of interest and involves the initial purchase made by the angler. The indirect effect refer to changes in inter-industry transactions, such as when supporting industries like hotels respond to increased influx of recreation anglers in the directly affected sector in Alabama. The induced effect refers to the changes in local economy due to spending that may result from income changes of the industry employee households and create a continued cycle of indirect and induced effects.

For this study, IMPLAN measures the consequences of the expenditures on recreational fishing on local employment, wage levels, and other business activities that results from directly, indirectly, or is induced by the new income into the local economy. For a specified region, the input-output table accounts for all dollar flows between different sectors of the economy. Using this information, IMPLAN models the way a dollar injected into one sector is spent and re-spent in other sectors of the economy. This generates waves of economic activity referred to as “economic multiplier” effects. IMPLAN captures these effects and the model determines multipliers that describe these interactions within a specified region. The model uses national industry data and county-level economic data to generate a series of multipliers, which in turn, estimate the total economic implications of economic activity. The total multiplier for an industry is the sum of the direct, indirect, and induced effects.

In the case considered here, the industry is recreational fishing. The economies in question are those of the State of Alabama and the Alabama Black-Belt. The question being addressed by this study is what the effect of recreational spending is doing, and would do if spending increases occur as a result of expanded recreational fishing activities resulting from improved site characteristics.

### **Data**

The data to assess economic activity and economic impact were gathered by direct mail surveys sent to a randomly selected sample of 6,250 licensed anglers in Alabama. The sample was obtained from a list that consisted of names and addresses of 80,000 anglers from licenses sold in Alabama during the 2008/09 fishing season. A pilot test of the questionnaire was conducted with 50 anglers in May 2009 to ensure content validity of the needed information for the study. The 50 are not included in the results of this study. The main survey was conducted between August 28 and December 13 of 2009 by mail. Mails were sent four times to non-responders in order to increase the response rates. The selected sample from the population and the number of mailings were constrained by the budget available for the direct mail survey. Of the sample, 2,632 were returned because of incorrect addresses; therefore, the sample size was reduced to 3,618 anglers. Overall, 708 subjects responded to the survey; the response rate was of 19.6%. This response rate is acceptable as Visser et al. (1996) showed that surveys with lower response rates (near 20%) can yield comparable outcomes relative to those with higher response rates of about 60 or 70%.

The survey was used to collect data on individual angler characteristics, expenditures on fishing equipment, number of recreational fishing trips and destinations and expenditures on time and travel for each trip taken, based on a one-year period. A one year period was used in order to avoid memory loss and double counting by the respondents on questions related to frequency to fishing sites within the year. The differences in trip demand for the Black Belt versus the rest of Alabama’s counties were also ascertained. An ideal fishing site that would enhance fishing experience was created in the survey and the anglers were asked under eight different price scenarios how much they would pay to visit such site. The responses to these provided a baseline, or status quo, scenario for comparison with changes in demand to be expected from enhanced fishing experience.

## **The Impact Analysis**

Economic impact analysis predict the economic effects on a region or economy of a new business, a new project venture, or new injections into the region or economy of interest. It is a counterfactual policy tool that shows a condition contrary to the present situation. For the purpose of this study, the impact analysis shows the effect that tourism, induced by recreational fishing, could have on the State of Alabama's economy and the economy of the Black Belt Region of State.

In the application of a final demand change to a predictive economic input-output model and then analyzing the resulting changes in the economy, the IMPLAN software uses producer prices, while the data collected are those of final purchase prices; thus, these prices are separated by the use of margins, the difference between the producer and final consumer price. This margin is further divided by the use of the regional purchasing coefficient (RPC). The RPC defines the trade flow in a region and it differs for regions and for states. The RPC determines the percentage of the final consumer price that remains in the local economy where the final spending takes place.

The anglers' expenditures are carefully distributed in the IMPLAN sectoring scheme. Based on this scheme, nine industry sectors in IMPLAN are used to analyze the Alabama recreation fishing sector for the 2008/2009 season. The sectors include petroleum refineries, food services and drinking places, miscellaneous store retailers, sporting goods and hobby stores, recreational sport centers, hotels and motels, travel trailers and campers' manufacturers, water transportation, and the non-store retailers' sector. These industries are defined based on their primary output or service as defined by the North American Industry Classification System (NAIC) and Bureau of Economic Analysis (BEA). The output value of each type of product is specified as an impact event in the respective industry.

Economic impacts of current expenditures by the anglers were generated using the IMPLAN model. The total willingness to pay amount by each angler was then added to their total cost per trip, and IMPLAN was used to generate potential economic impact to the state. The potential impact was compared to the actual (baseline) to determine the potential increase in economic impact to the state if the fishing sites were improved through good aquaculture practices or improvements to existing fishing sites.

Inputs purchased by the recreational sector such as gas, food and drinks, bait and tackle, fishing license, hotel and lodging, camping equipment, boat rentals, and other gears, constitute the production function that drives the estimates of indirect and induced impacts. The direct impacts are the ones for local consumption as they do not represent a change in the overall economic activity for the region. These are allocated to the sectors that are represented in the local economy from which the recreation fishing sector got their inputs. The industry information on value added, employee compensation, proprietor income, other property income, and indirect business taxes are all left as default in the IMPLAN model.

Figures 2 and 3, respectively, show the distribution of the expenditures of the anglers who fished in the state as a whole and those who fished in the Black Belt. It shows that 22% of the anglers that fished in the Black Belt spent \$500 or more compared to the 17% that spent equal amount in

the state. For those who spent \$200 and above, 53% fished in the Black Belt and the 51% fished in the state. This shows that the water bodies in the Black Belt have the potential to attract more spenders, and this could be a good source of new income to the region.

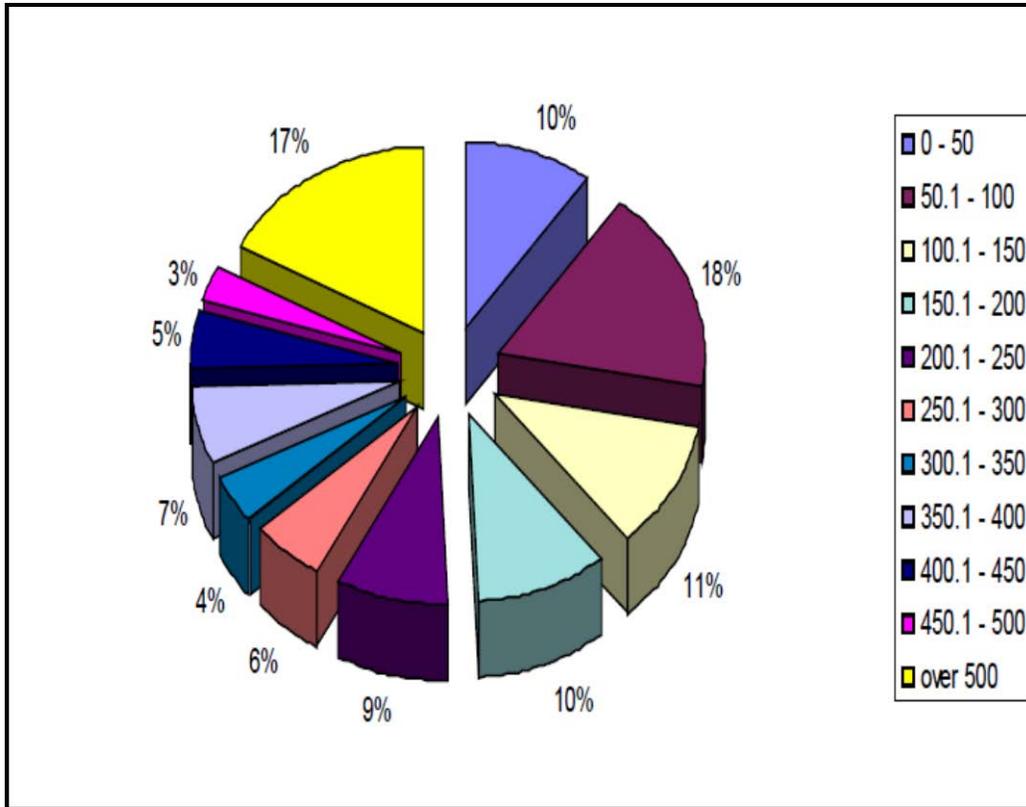


Figure 2. State Anglers' Expenditures (\$) in the state

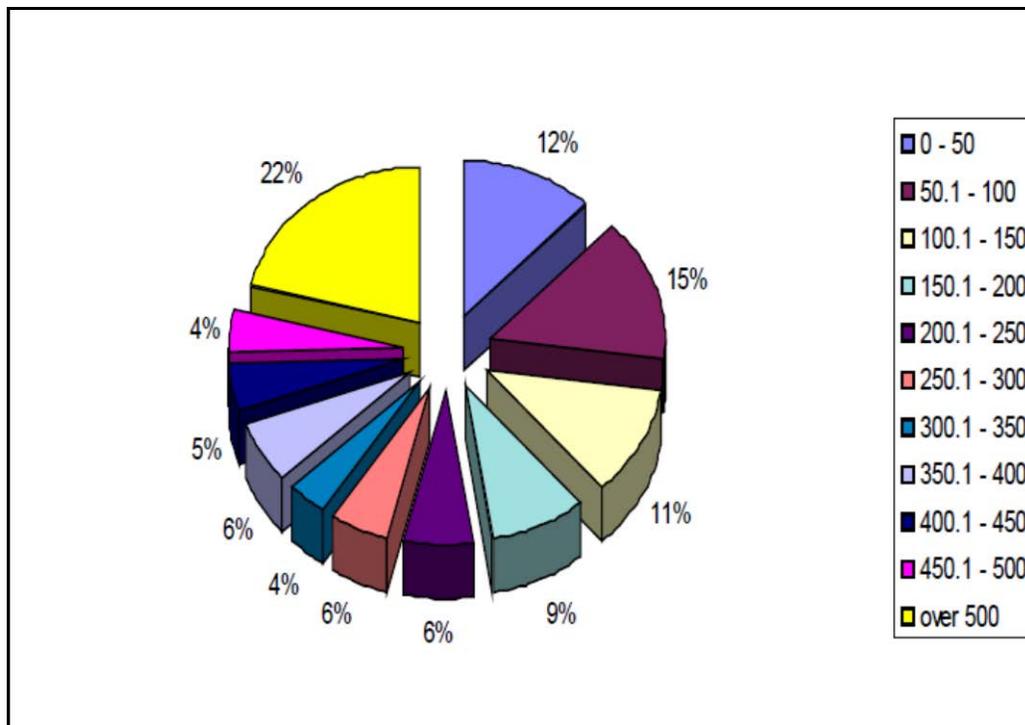


Figure 3. Black Belt Anglers' Expenditures (\$) in Alabama Black Belt

### Results and Discussion

Of the 708 respondents, 236 fished in the Black Belt waters. As reported earlier, a total of 80,000 anglers were reported by the Department of Fisheries for the State, but 26,667 were reported to have fished in Black Belt waters. Table 2 shows estimated amounts spent by the 80,000 anglers during the 2008/2009 fishing season on recreational fishing on inputs such as gas, food and drinks, bait and tackle, fishing license, fishing gears, hotels and lodgings, camping, boat rentals, entrance fees, and other miscellaneous spending, respectively, \$77.8m, \$51.1m, \$33.6m, \$30.4m, \$36.1m, \$48.7m, \$9.2m, \$5.2m, \$9.6m, and 48.4m. The Table also shows the increase in expenditure by virtue of extra amount the respondents were willing to pay (WTP) for an ideal fishing site if presented with all the features that the angler wants. The WTP amount is added only to the site fee expenditure. As a result of this willingness to pay for ideal site, the total expenditure increased from \$350.3m to \$369.9m for the fishing season. This represents a 6% increase in total expenditures by the anglers.

In the application of a final demand change to a predictive economic input-output model and then analyzing the resulting changes in the economy, the IMPLAN software uses producer prices while the data collected are those of final purchase prices. These prices are separated by the use of margins, the difference between the producer and final consumer price. The margin is streamlined by the use of the regional purchasing coefficient (RPC). The RPC defines the trade flow in a region and it differs for regions and for states. The RPC determines the percentage of the final consumer price that remains in the local economy, where the final spending takes place.

Table 2. Alabama Expenditures for Recreational Fishing (2008/9)

Category	708 State Anglers Expenditures	Av. Exp. \$ (708 Anglers)	Total Exp. for (80,000 ANG) \$.	Increase in Total Exp. From WTP \$	*RPC (%)
Gas	688,456.44	972.4	77,791,688.05	77,791,688.05	32.80
Food and Drinks	452,354.49	638.92	51,113,501.52	51,113,501.52	90.00
Bait & Tackle	297,810.61	420.64	33,650,916.40	33,650,916.40	77.60
License	269,097.01	380.08	30,406,441.65	30,406,441.65	77.60
Fishing Gears	319,398.83	451.13	36,090,263.43	36,090,263.43	77.60
Hotels & Lodgings	431,395.45	609.32	48,745,248.49	48,745,248.49	40.50
Camping	82,088.82	115.94	9,275,573.11	9,275,573.11	22.50
Boat Rentals	46,049.63	65.04	5,203,348.18	5,203,348.18	100.00
Entrance Fees	85,193.02	120.33	9,626,330.08	29,252,855.50	100.00
Misc	428,375.47	605.05	48,404,008.19	48,404,008.19	75.00
Total	3,100,219.77	4,378.84	350,307,319.10	369,933,844.53	

Table 3 shows the expenditures by the 26,667 anglers that fished in Black Belt waters. The total expenditure is shown to be \$81.9m, and it increases to \$88.4m with an ideal site improvement which includes better aquaculture management to improve fish quality (i.e., WTP). This increase represents an 8% increase in total expenditures by Black Belt anglers. A comparison of RPCs of the state and the Black Belt Region, show that all the RPCs of the state are higher than those of the Black Belt. This observation is explained by the fact that there are more economic activities at the state level than within the economically poor Black Belt.

Table 3. Alabama Black Belt Expenditures for Recreational Fishing Season (2008/9)

Category	236 BB Anglers Expenditures (\$)	Av. Exp. \$ (236 Ang)	Total Exp. for (26,667 ANG) \$.	Increase in Total Exp. From WTP \$	*RPC (%)
Gas	54,484.76	230.87	6,156,547.34	6,156,547.34	5.60
Food and Drinks	119,595.89	506.76	13,513,828.79	13,513,828.79	83.90
Bait & Tackle	86,933.62	368.36	9,823,130.54	9,823,130.54	75.30
License	92,249.10	390.89	10,423,757.24	10,423,757.24	75.30
Fishing Gears	82,100.05	347.88	9,276,957.96	9,276,957.96	47.80
Hotels & Lodgings	151,953.36	643.87	17,170,085.35	17,170,085.35	29.20
Camping	22,555.58	95.57	2,548,684.54	2,548,684.54	8.50
Boat Rentals	9,994.40	42.35	1,129,324.66	1,129,324.66	100.00
Entrance Fees	13,523.72	57.3	1,528,123.09	8,004,644.73	100.00
Misc	91,778.42	388.89	10,370,572.03	10,370,572.03	57.30
Total	725,168.89	1,024.25	81,939,987.30	88,417,533.18	

\*RPC is the Regional Purchasing Coefficient that shows the percentage of expenditure that remains in the economy to create an impact.

Tables 4A and 4B show the direct, indirect, induced, and total impacts as a result of recreation expenditures of the 80,000 anglers in the state and the 26,667 anglers in the Black Belt for the 2008/09 fishing season. For the state, the table shows a direct total value added impact of \$102.5m, and indirect impact of \$24.7m, and an induced impact of \$8.3m which all add up to a total impact of \$135.5m in total value added to the state. This total impact can potentially increase to \$142.2m, a 4.9% increase, with an increase in total expenditure if the fishing sites

were improved to ideal state, and anglers are willing to pay for improved site characteristics. The total labor impact for the state is 4,442 jobs that are created as a result of the expenditures. This employment impact could potentially increase to 4,682 jobs, a 5.4% potential increase in jobs if the sites are improved.

Table 4A. Alabama and the Black Belt - Social Account Matrix (SAM)  
IMPACTS of Anglers - 2008/09

Statewide	Direct*		Indirect*	
	Actual	Potential	Actual	Potential
Employee compensation	57,534,949.00	59,417,010.00	11,500,631.00	12,117,283.00
Indirect Business tax Income	17,559,197.00	18,989,604.00	2,260,218.00	2,356,557.00
Property Income	19,516,547.00	20,800,432.00	8,696,166.00	9,094,067.00
Proprietors Income	7,858,052.00	8,373,779.00	2,246,429.00	2,339,843.00
<b>Total Value Added</b>	<b>102,468,752.00</b>	<b>107,580,833.00</b>	<b>24,703,444.00</b>	<b>25,907,750.00</b>
Labor Income	65,393,003.00	67,790,791.00	13,747,059.00	14,457,126.00
Output	280,915,315.00	288,435,268.00	45,494,541.00	47,447,295.00
Employment(# of Jobs)	3,940.70	4,155.70	354.3	373.5

Black-Belt	Direct*		Indirect*	
	Actual	Potential	Actual	Potential
Employee compensation	17,495,010.00	19,006,465.00	2,708,158.00	3,135,224.00
Indirect Business tax Income	5,390,765.00	6,553,690.00	413,567.00	471,889.00
Property Income	4,240,941.00	5,284,007.00	1,676,494.00	1,933,051.00
Proprietors Income	3,677,331.00	4,113,327.00	395,599.00	453,959.00
<b>Total Value Added</b>	<b>30,804,045.00</b>	<b>34,957,488.00</b>	<b>5,193,818.00</b>	<b>5,994,122.00</b>
Labor Income	21,172,340.00	23,119,791.00	3,103,757.00	3,589,183.00
Output	77,661,399.00	83,773,459.00	9,408,989.00	10,732,076.00
Employment(# of Jobs)	1,344.70	1,532.00	93.5	107.5

#### A: Direct and Indirect Economic Impacts

The total value added in the Black-Belt is \$38.3m (Table 4B) which could potentially increase to \$43.4m (Table 4B) with an improvement to the fishing sites in the region. This potentially represents a 13.3% increase in the Black Belt and 4.9% increase for the state. This lower potential impact for the state could be improved; the Black Belt has potential for improvement if the conditions of the fishing sites are upgraded. For the Black Belt, this value added culminates

Table 4B. Alabama and the Black Belt - Social Account Matrix (SAM)  
 IMPACTS of Anglers - 2008/09

Statewide	<u>Induced*</u>		<u>Total*</u>		Multiplier
	<u>Actual</u>	<u>Potential</u>	<u>Actual</u>	<u>Potential</u>	
Employee compensation	4,076,824.00	4,237,343.00	73,112,405.00	75,771,635.00	1.27
Indirect Business tax Income	892,254.00	927,386.00	20,711,668.00	22,273,547.00	1.18
Property Income	2,794,970.00	2,905,019.00	31,007,684.00	32,799,518.00	1.59
Proprietors Income	570,027.00	592,471.00	10,674,508.00	11,306,093.00	1.36
<b>Total Value Added</b>	<b>8,334,076.00</b>	<b>8,662,219.00</b>	<b>135,506,272.00</b>	<b>142,150,805.00</b>	<b>1.32</b>
Labor Income	4,646,852.00	4,829,814.00	83,786,914.00	87,077,730.00	1.28
Output	13,335,204.00	13,860,259.00	339,745,063.00	349,742,827.00	1.21
Employment(# of Jobs)	146.6	152.4	4,441.70	4,681.60	1.13

Black-Belt	<u>Induced*</u>		<u>Total*</u>		Multiplier
	<u>Actual</u>	<u>Potential</u>	<u>Actual</u>	<u>Potential</u>	
Employee compensation	1,117,990.00	1,230,323.00	21,321,158.00	23,372,009.00	1.22
Indirect Business tax Income	239,677.00	263,760.00	6,044,009.00	7,289,339.00	1.12
Property Income	767,001.00	844,073.00	6,684,436.00	8,061,131.00	1.58
Proprietors Income	130,174.00	143,254.00	4,203,104.00	4,710,540.00	1.14
<b>Total Value Added</b>	<b>2,254,842.00</b>	<b>2,481,409.00</b>	<b>38,252,706.00</b>	<b>43,433,019.00</b>	<b>1.24</b>
Labor Income	1,248,164.00	1,373,577.00	25,524,261.00	28,082,551.00	1.21
Output	3,557,017.00	3,914,427.00	90,627,407.00	98,419,963.00	1.17
Employment(# of Jobs)	42.3	46.6	1,480.50	1,686.20	1.1

**B: Induced and Total Economic Impacts**

into 1,345 direct jobs, 95 indirect jobs, and 42 induced jobs. Thus, the total jobs created are 1,481 (Table 4B) and this could potentially increase to 1,686 jobs (Table 4B), 13.8% increase, if the fishing sites are improved to ideal state.

**Conclusion**

There are lots of water bodies in the state of Alabama, particularly in the Black Belt Region. These water bodies have potential to be improved for recreational uses by anglers and others who may love their aesthetic values. The number of anglers reported by the state for the 2008/2009 fishing season suggest the potential that lies in improving these water bodies. There exist potential impacts that could be generated from the incomes that the anglers bring into the

regions where they fish. This potential incomes could be a lifeline to the economically poor Black Belt Region of Alabama which has unused water resources.

Given the result by this impact analysis, it is evident that an improvement in the site quality by site owners or improvement in the quality of the public fishing sites by the government would generate extra willingness to pay for these sites by the current pool of anglers in the state. These improvements could also make more people to be interested in fishing, picnicking, and watching nature or just to come in and enjoy the recreational fishing in the state and in the Black Belt.

These economic impacts are based on the responses from the survey sent to anglers in the state for the 2008/9 fishing season. It is important that in order to get a more accurate result, the study would have to be done over a number years in order to be sure that the estimates in this study are consistent.

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