

**REGIONAL AND STATEWIDE ECONOMIC IMPACTS
OF SPORT FISHING, OTHER RECREATIONAL ACTIVITIES,
AND COMMERCIAL FISHING ASSOCIATED WITH
MAJOR BAYS AND ESTUARIES OF THE
TEXAS GULF COAST**

EXECUTIVE SUMMARY

**Prepared for
the**

TEXAS WATER DEVELOPMENT BOARD

by

**DEPARTMENT OF RECREATION AND PARKS
DEPARTMENT OF AGRICULTURAL ECONOMICS**

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**TEXAS AGRICULTURAL EXPERIMENT STATION
TEXAS A&M UNIVERSITY SYSTEM**

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Regional and Statewide Economic Impacts of Sport Fishing, Other Recreational Activities, and Commercial Fishing Associated With Major Bays and Estuaries of the Texas Gulf Coast

EXECUTIVE SUMMARY

This report summarizes the findings of six reports on six individual Texas bays and estuaries, including (1) the Sabine-Neches estuary, (2) the Trinity-San Jacinto estuary, (3) the Lavaca-Tres Palacios estuary, (4) the Guadalupe estuary, (5) the Nueces and Mission-Aransas estuary, and (6) the Laguna Madre estuary. For these six estuaries, analyses were performed to compute estimates of the quantities of sport fishing, other recreational activity (hunting, picnicking, swimming, camping, pleasure boating, and sightseeing), and commercial fishing and the economic impacts of these activities upon the state and local economies. The methodology employed in doing so involved the use of various statistical survey instruments, published statistical series on commercial fishing and the development and construction of regional input-output models. The economic impacts for these studies have focused on the contribution of these aforementioned economic activities to the economies of the local region and the state in the form of output, employment, income, and state and local tax revenues.

Visitation Patterns

The results of the study indicate that there were approximately 10,251,901 visits to the Texas Coast during calendar year 1986; of these visits 58.8 percent (6,032,892 visits) were by fishermen traveling to the coast. Approximately 22 percent of the total visits occurred from January through April, 1986; whereas 50 percent of the total occurred during the summer months (May through August); finally, 28 percent occurred between September 1 and December 31, 1986.

As part of a mail survey, information was collected concerning each household's current county of residence, the distance required to travel to each of the places visited along the Texas Gulf Coast, as well as the number of years members of the household had been visiting each

place. The survey results indicate that households residing in Texas travel, on average, 170 miles to reach their destinations on the Texas Gulf Coast. This relatively short travel distance is largely reflected by the population distribution within the state and the distribution of resources along the Coast. Harris County was overwhelmingly the largest source for visitors; 28.2 percent of the visitors to the coast were from Harris County. 7.6 percent of the visitors were from Bexar County and 6.5 percent were from Dallas County.

This overall travel pattern hides the substantial differences in visitation between the six estuaries which define the Texas Gulf Coast (Sabine-Neches, Trinity-San Jacinto, Lavaca-Tres Palacios, Guadalupe, Nueces and Mission-Aransas, and Laguna Madre). As discussed in the individual estuary reports, visitation ranged from a high of 6,688,839 household visits in the Trinity-San Jacinto estuary to a low of 105,785 visits in the Guadalupe estuary. Generally, most visitors to the Coast lived within 100-125 miles of the coast with the exception of visitors to the Laguna Madre estuary; in this estuary the average travel distance was approximately 300 miles.

One of the important assumptions guiding the study was that a trip to the Texas Coast involved a number of recreation activities. The results of the study support this assumption; camping and sport fishing account for 43.3 percent of the time allocated to recreation activity, while swimming (20.6% of their recreational effort) and sightseeing (17.1% of the time) were also popular activities.

As indicated previously, a primary focus of this study was on the economic importance of sport fishing to communities along the Texas Gulf Coast. For those fishing in estuaries along the Gulf coast, Sea Trout was caught most often, followed by Flounder and Red Drum. Fishermen were also asked to evaluate the overall quality of the Texas Gulf Coast in the vicinity of the place(s) they went fishing. Of those surveyed 10.3 percent indicated that this area was excellent for fishing; 41.6 percent and 37.2 percent thought the area was fair or good for fishing while only 9.7 percent indicated that places along the Texas Gulf Coast were poor to very poor .

Direct Expenditures

During the survey, respondents were asked to indicate their expenditures while on a "typical" or "average" trip to each particular place along a Texas Coast estuary. Specifically, respondents were asked to estimate their total expenditures for seven types of goods and services: 1) overnight lodging (2) transportation (3) grocery store purchases (4) restaurants and other eating establishments (5) rental of recreation equipment (6) entrance, participation, and guided tour fees and (7) fishing-related items including bait and boat fuel. The results of the study were used to estimate the total expenditures by Texans visiting places along the Texas Gulf Coast. As can be seen in Table 1, visitors to the coast spent approximately \$586,579,324 during 1986. Of this total, 62.1 percent (\$364,240,991) was spent by sport fishermen. Food costs accounted for a substantial portion (42.2% of total expenditures) of expenditures by fishermen; \$80,116,738 was spent on grocery store purchases and an additional \$73,686,071 was spent in restaurants. Transportation expenditures were also high at \$111,662,810 and accounted for almost 31 percent of total expenditures. Interestingly, for those visitors not fishing, considerably less was spent on food-related items (\$101,844,610) and accounted for proportionately less of overall travel expenditures (45.8%).

Table 1. Visitor Expenditures Along the Texas Gulf Coast

<u>Category</u>	<u>"Fishing" Household Expenditures</u>	<u>"Nonfishing" Household Expenditures</u>	<u>Total</u>
Transportation	\$111,662,810	\$78,245,392	\$189,908,202
Lodging	31,973,416	26,801,030	58,774,446
Restaurant	73,686,071	72,299,240	145,985,311
Grocery	80,116,738	29,545,367	109,662,105
Rental	9,591,367	5,762,093	15,353,460
Fees	13,824,809	9,685,211	23,510,020
<u>Fishing-Related Items</u>	<u>43,385,780</u>	<u>-----</u>	<u>43,385,780</u>
Total	\$364,240,991	\$222,338,333	\$586,579,324

Total expenditures varied substantially across estuaries. Visitors in the Trinity-San Jacinto estuary spent, for example, over \$293,000,000 (\$171,502,159 by sportfishing and \$122,400,417 by nonfishing households) in 1986 while approximately \$4,881,000 (\$3,801,889 by sportfishing and \$1,079,309 by nonfishing households) was spent in the Guadalupe estuary. This variation appears to reflect the population distribution relative to each of the estuaries, the resources available at the respective estuaries, and the degree of infrastructure development which supports tourist-related activities.

Economic Impacts

Total economic impacts for the Texas Gulf Coast were divided into regional and state impacts. The difference between the two being that the state impacts include travel expenditures spent outside the immediate bay and estuary region. These statewide Texas Gulf Coast economic impacts, from sport fishing and other recreational activity, were estimated using the statewide expenditure data for the entire Texas Gulf Coast and the 1986 Texas Input-Output Model developed for this study.

Estimation of the regional Texas Gulf Coast economic impacts from sport fishing and other recreational activity, however, were not as straight forward. No comprehensive regional Texas Gulf Coast input-output model had been developed for this study and simple aggregation of the regional economic impacts from each of the six estuary reports was not applicable because some bay system economic regions overlapped with others. Aggregation of these overlapping bay system economic regions would result in "double accounting" of the economic impacts which in-turn overstates the regional Texas Gulf Coast economic impacts.

The approach taken to circumvent this problem was to design a procedure that would eliminate double accounting. The procedure consisted of; (1) summing the state and regional impacts from each of the estuary reports for output, employment, and income; (2) computing the regional impact sum as a percent of the state impact sum for output, employment, and income; (3) use the percentages calculated in step 2 along with the statewide Texas Gulf coast economic

impacts estimated earlier to estimate regional impacts for the entire Texas Gulf Coast. Step 2 in this case eliminates the double accounting problem.

In contrast to the sport fishing and other recreational activity problem of double accounting when aggregating economic impacts from the six estuary reports, Texas Gulf Coast commercial fishing economic impacts did not experience this problem. Hence, commercial fishing impacts were simply aggregated from each of the six estuary reports to compute the Texas Gulf Coast commercial fishing impacts. Having performed all these calculations, the Texas Gulf Coast economic impacts from sport fishing, other recreational activity, and commercial fishing are presented in the tables that follow.

Table 2 presents 1986 expenditures and related economic impacts from sport fishing in the Texas Gulf Coast. Direct impacts were estimated at \$364.2 million for output, 14,465 full-time job equivalents for employment, and \$133.0 million for personal income. The total output impacts for the Texas Gulf Coast and the state amounted to an estimated \$734.3 million and \$1,159.9 million, respectively. Total employment impacts were of the order of 13,525 jobs for the Texas Gulf Coast and 20,473 jobs for the state. Of the total of \$310 million of total personal income impacts 55 percent (\$170.4 million) were generated within the Texas Gulf Coast.

**Table 2. Direct and Total Economic Impacts From Sport Fishing Expenditures
Along the Texas Gulf Coast 1986**

	Direct Impacts	Total Impacts	
		Regional	State
Output (million \$)	364.2	734.3	1,159.9
Employment (man-years)	14,465.0	13,525.0	20,474.0
Income (million \$)	133.0	170.4	310.2
State Tax Revenues (million \$)	1.7	14.3	15.7
Local Tax Revenues (million \$)	4.6	25.4	27.9

Increased economic activity due to gross dollar flows from the sport fishing industry also impact positively the revenues to state and local governments. As can be observed in Table 2, about \$14.3 million of the total statewide state tax revenues, which amounted to \$15.7 million, were collected in the Texas Gulf Coast region. Additionally, local governments outside the Texas Gulf Coast region collected an estimated \$2.5 million in taxes on travel expenditures by sport fishermen for a total impact on local governments of \$27.9 million statewide in 1986.

The combined impacts from both sport fishing and other recreational activity for the Texas Gulf Coast in 1986 are presented in Table 3. Total regional output impacts were about 62 percent of the total state output impacts. Other recreational activity contributed an additional \$222.4 million of direct output impacts (expenditures) for the Texas Gulf Coast. The total employment impacts show that about 62 percent of the jobs were created locally while the other 38 percent were generated elsewhere throughout the state. Increased household personal income for the Texas Gulf Coast resulting from both sport fishing and other recreational activity amounted to over \$273 million. In addition, household income generated outside the region, due to travel expenditures of recreational and sport fishing participants, was estimated at over \$237.6 million bringing the total state personal income impact to \$511.1 million.

Table 3. Direct and Total Economic Impacts From Sport Fishing Expenditures and Other Recreational Activity Along the Texas Gulf Coast, 1986

	Direct Impacts	Total Impacts	
		Regional	State
Output (million \$)	586.6	1,194.4	1,913.7
Employment (man-years)	24,095.0	20,940.0	33,904.0
Income (million \$)	218.4	273.5	511.1
State Tax Revenues (million \$)	2.6	22.8	25.3
Local Tax Revenues (million \$)	7.4	40.7	45.0

Table 3 also shows that most of the state and local tax revenues generated by sport fishing and other recreational activities were collected within the region. Total state tax revenues amounted to an estimated \$25.3 million of which \$22.8 million were collected within the Texas Gulf Coast region. Local tax jurisdictions within the region received over \$40 million in tax revenues while those outside the region received an additional \$4.3 million for a total statewide tax impact on local jurisdictions of \$45.0 million in 1986.

The analysis of the commercial fishing industry in the Texas Gulf Coast estuary region was carried out using data available from the Texas Parks and Wildlife Department. Given that Texas Gulf Coast bay systems correspond with Texas Gulf Coast estuaries, for purposes of estimating direct and total economic impacts, the value of commercial fish landings in the Texas Gulf Coast bay systems were chosen to represent Texas Gulf Coast estuary commercial fishing industry direct value of output. In addition, since commercial fish landings may vary significantly from year to year, an average of landings in 1984, 1985, and 1986 were computed to represent a typical current year. This procedure reduces the influence of annual variations in commercial landings.

The average inshore-offshore commercial fish landings, both finfish and shellfish, for the Texas Gulf Coast estuaries were reported to be over 104.1 million pounds with an ex-vessel value of over \$205 million for the 1984 through 1986 period. Of this shrimp made up more than 90 percent of the total value of landings while eastern oyster, blue crab, and flounder accounted for most of the remaining value. Direct employment in the inshore-offshore fisheries industry was estimated at 8,653 full-time job equivalents and personal income to households by the inshore fishing industry was calculated at \$55.3 million (see Table 4). In addition, Table 4 also shows that the commercial inshore-offshore fishing industry paid \$958 thousand directly in state taxes and \$1.3 million in local taxes.

Gross Texas business resulting from inshore-offshore commercial fishing, processing, and marketing fish attributed to the Texas Gulf Coast estuaries in 1986 was estimated at \$650.6

million of which \$431.1 million was business within the Texas Gulf Coast. This regional industry also supported a total of 13,108 full-time job equivalents and created personal income amounting to \$94.9 million or 60 percent of the total personal statewide income impact of \$163.9 million. Also generated by this industry were statewide state taxes of \$8.1 million and local tax revenues of \$13.7 million.

Table 4. Direct and Total Economic Impacts From Inshore and Offshore Commercial Fishing Along the Texas Gulf Coast 1986

	Landings		Total Impacts			
	Inshore	Inshore-Offshore	Inshore Region	Inshore State	Inshore-Offshore Region	Inshore-Offshore State
Output (million \$)	34.5	205.3	76.0	113.5	431.1	650.6
Employment (man-years)	1,942.0	8,653.0	2,200.0	2,473.0	13,108.0	14,715.0
Income (million \$)	9.7	55.3	16.6	28.7	94.9	163.9
State Tax Rev. (million \$)	.168	.958	a	1.5	a	8.1
Local Tax Rev. (million \$)	.231	1.3	a	2.4	a	13.7

a. There was insufficient data to calculate the regional tax impacts.

Table 5 presents the combined direct and total economic impacts from sport fishing, other recreational activity, and commercial fishing (inshore-offshore) in the Texas Gulf Coast in 1986. The total economic output impacts of these three economic activities amounted to \$1,625.5 and \$2,564.3 for the Texas Gulf Coast and the state, respectively. Of these two totals sport fishing contributed the largest impact (45 percent) followed by commercial fishing (28) and other recreational activity (27 percent).

Direct employment impacts for the Texas Gulf Coast due to these three economic activities were estimated at 32,748 full-time job equivalents. Total employment impacts on the other hand amounted to about 34,048 and 48,619 for the Texas Gulf Coast and the state,

respectively. Income impacts were also generated as a result of these economic activities. These personal income impacts were over \$368 million for the Texas Gulf Coast and about \$675 million for the state. The total state tax revenue collected throughout the entire state was estimated at around \$33.4 million. Likewise, local tax jurisdictions throughout the state collected over \$58.7 million.

Table 5. Direct and Total Economic Impacts From Sport Fishing, Other Recreational Activity, and Commercial Fishing Along the Texas Gulf Coast, 1986

	Direct Impacts	Total Impacts	
		Regional	State
Output (million \$)	791.9	1,625.5	2,564.3
Employment (man-years)	32,748.0	34,048.0	48,619.0
Income (million \$)	273.7	368.4	675.0
State Tax Revenues (million \$)	3.6	24.3 ^a	33.4
Local Tax Revenues (million \$)	8.7	43.1 ^a	58.7

a. Includes only tax impacts from sport fishing and other recreational activity.