

The Economic Contributions of Recreational Visitation at Trinity River National Wildlife Refuge

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This paper establishes the economic contribution baseline for recreational visitation at Trinity River National Wildlife Refuge (Refuge). The paper addresses the levels of Refuge recreational activities and the economic effects of Refuge recreational activities. The analysis is followed by a glossary of terms. For more information regarding the methodology, please refer to “Banking on Nature – The Economic Contributions to Local Communities of National Wildlife Refuge Visitation” at <https://www.fws.gov/economics/divisionpublications/divisionpublications.asp>.

From an economic perspective, Trinity River National Wildlife Refuge provides a variety of environmental and natural resource goods and services used by people either directly or indirectly. The use of these goods and services may result in economic effects to both local and state economies. The various services the Refuge provides can be grouped into five broad categories: (1) maintenance and conservation of environmental resources, services and ecological processes; (2) protection of natural resources such as fish, wildlife, and plants; (3) protection of cultural and historical sites and objects; (4) provision of educational and research opportunities; and (5) outdoor and wildlife-related recreation. A comprehensive economic profile of the Refuge would address all applicable economic effects associated with the use of refuge-produced goods and services. However, some of the major contributions of the Refuge to the natural environment, such as watershed protection, maintenance and stabilization of ecological processes, and the enhancement of biodiversity are beyond the scope of this paper. Therefore, this paper focuses on economic effects associated with recreational visitation. As a result, benefits represent conservative estimates and do not represent the Refuge’s total social impacts.

Refuge Description

Trinity River National Wildlife Refuge was established 4 January, 1994. The Refuge now totals 30,000 acres. The Emergency Wetlands Resources Act of 1986 is the acquisition authority for the Refuge. The Refuge is about 45 miles east of Houston and, although located in a rural setting, it is within 65 miles of over 6 million people. Refuge visitation is generally over 25,000, but extreme weather events such as flooding or severe droughts cause significant fluctuations in our numbers. A paved road in 2012 to our main public use area, along with a new headquarters facility constructed in 2012, increased hunting opportunities, and the addition of some 20 more miles of primitive trails have boosted visitation and we will likely see greater numbers in the foreseeable future.

The primary purpose of establishing this Refuge is to protect a remnant of the bottomland hardwood forest ecosystem along the Trinity River. It is one of only 14 priority-one bottomland sites identified for protection in the Texas Bottomland Protection Plan. Additionally, this Refuge is located within the Gulf Coast Joint Venture Project Area of the North American Waterfowl Management Plan and, as such, is highly valuable for a diversity of waterfowl species. This type of habitat is used during migration or nesting by nearly 50 percent of the neotropical migratory bird species listed by the Service. Bottomland hardwood forests also support abundant populations of white-tailed deer, squirrels, numerous other furbearers, freshwater turtles, alligators, snakes, river otters, and bald eagles. Although not fully surveyed, it is known that the Refuge contains more than 650 plants, 80 butterflies, 875 moths, and another 350 vertebrate species including more than 213 birds, 49 fish, 44 mammals, and 52 reptiles and amphibians. The project site is the remnant of what was once a much larger natural area and still consists of a broad, flat flood plain, numerous sloughs, oxbows, artesian wells and tributaries, with few

modifications. Timber harvest, gravel mining, and residential and commercial developments are imminent threats to the stability of this system.

Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 24,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for about 10,000 visits with residents comprising 91 percent of Refuge visitation.

Table 1. Trinity River NWR: 2017 Recreation Visits

Activity	Residents	Non-Residents	Total
Non-Consumptive:			
Pedestrian	4,500	500	5,000
Auto Tour	-	-	-
Boat Trail/Launch	1,900	100	2,000
Bicycle	125	-	125
Photography	30	30	60
Interpretation	2,514	132	2,646
Other Recreation	-	-	-
Visitor Center	300	300	600
Hunting:			
Big Game	628	295	923
Small Game	88	29	117
Migratory Birds	92	34	126
Fishing:	11,400	600	12,000
Total Visitation	21,576	2,021	23,597

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

Regional Economic Analysis

The economic area for the Refuge is Liberty County, Texas. It is assumed that visitor expenditures occur primarily within these counties. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$398,000 with non-residents accounting for \$84,000 or 21 percent of total expenditures. Expenditures on non-consumptive activities accounted for 20 percent of all expenditures.

Spending in the local area generates and supports economic activity within Liberty County (Table 3). The contribution of recreational spending in local communities was associated with about 5 jobs, \$144,000 in employment income, \$54,000 in total tax revenue, and \$471,000 in economic output.

Table 2. Trinity River NWR: Visitor Recreation Expenditures (2017 \$,000)

Activity	Residents	Non-Residents	Total
Non-Consumptive	\$60.9	\$17.9	\$78.9
Hunting	\$24.9	\$46.8	\$71.7
Fishing	\$227.9	\$19.4	\$247.3
Total Expenditures	\$313.7	\$84.2	\$397.9

Table 3. Trinity River NWR: Local Economic Contributions Associated with Recreation Visits (2017 \$,000)

	Residents	Non-Residents	Total
Economic Output	\$370.4	\$100.3	\$470.8
Jobs	4	1	5
Job Income	\$116.5	\$27.8	\$144.3
State and Local Tax Revenue	\$42.9	\$11.3	\$54.2

Glossary

Economic Contribution: The economic activity generated in a region by residents and non-resident recreation spending.

Expenditures: The spending by recreational visitors when visiting refuges. Expenditure categories include food, lodging, transportation, and other. Expenditure information is based on the 2011 National Survey of Fishing, Hunting and Wildlife Associated Recreation (NSFHWR).

Economic Output: The total spending by final consumers on all goods. The amount reported in this study is the change in spending by final consumers in the region attributable to refuge visitation. Economic output includes spending by people who earn income from refuge visitors' activities as well as spending by refuge visitors themselves.

Impact: The new economic activity generated in a region as a refuge attracts non-residents to the area. This figure represents economic activity that would be lost if the refuge were not there.

IMPLAN: An economic modeling software package that applies input-output analysis techniques to regional economies.

Jobs: Full and part time jobs.

Job Income: Income to households from labor including wages and salaries.

Resident/Non-Resident: People living more than 50 miles from the refuges are considered non-residents for this study.

Tax Revenue: Local, county and state taxes: sales tax, property tax, and income tax

Visitors: A visitor is someone who comes to the refuge and participates in one or more of the activities available at the refuge.

Visits (visitation): A visit is not the same as a visitor. One visitor could be responsible for several visits on a refuge. For example, if a family of four went fishing in the morning and hiked a short nature trail in the afternoon, they would have contributed 8 activity visits to the refuge; yet, they are only four visitors.

References

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