

The Economic Contributions of Recreational Visitation at Big Muddy National Fish and Wildlife Refuge

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This paper establishes the economic contribution baseline for recreational visitation at Big Muddy National Fish and 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, Big Muddy National Fish and 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

The Big Muddy National Fish and Wildlife Refuge encompasses the final 367 miles of the Missouri River from Kansas City to St. Louis, Missouri. Refuge units span the reach from extremely rural to the urban outskirts of St. Louis and Kansas City within 15 minutes of several million people. All 17 units of the Refuge are open to the public. All units provide the big 6 public use opportunities. Units in the urban St. Louis region restrict hunting from the use of firearms, and the remaining 15 units allow the use of firearms during appropriate Missouri hunting seasons.

The Refuge strives to reach these diverse users by providing Environmental Education presentations to rural schools as well as inner city schools and educational events. Interpretation activities are provided at most Refuge units by at least one information kiosk. Interpretation signs are provided along trails where appropriate and accessible to the public. These signs interpret the natural and cultural history of the Refuge.

Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 12,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Hunting activities accounted for about 5,900 visits with residents comprising 84 percent of Refuge visitation.

Table 1. Big Muddy NFWR: 2017 Recreation Visits

Activity	Residents	Non-Residents	Total
Non-Consumptive:			
Pedestrian	1,980	220	2,200
Auto Tour	-	-	-
Boat Trail/Launch	-	-	-
Bicycle	-	-	-
Photography	563	63	625
Interpretation	1,520	80	1,600
Other Recreation	-	-	-
Visitor Center	240	60	300
Hunting:			
Big Game	2,800	1,200	4,000
Small Game	630	70	700
Migratory Birds	955	195	1,150
Fishing:	1,758	93	1,850
Total Visitation	10,445	1,980	12,425

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

Regional Economic Analysis

The economic area for the Refuge is Bates, St. Clair, Cedar, Ray, Jackson, Lafayette, Saline, Chariton, Cooper, Boone, Osage, Franklin, St. Charles, and St. Louis Counties in Missouri. It is assumed that visitor expenditures occur primarily within these counties. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were about \$260,000 with non-residents accounting for \$101,000 or 39 percent of total expenditures. Expenditures on hunting activities accounted for 73 percent of all expenditures.

Spending in the local area generates and supports economic activity within the 14-county area (Table 3). The contribution of recreational spending in local communities was associated with about 4 jobs, \$170,000 in employment income, \$23,000 in total tax revenue, and \$444,000 in economic output.

Table 2. Big Muddy NFWR: Visitor Recreation Expenditures (2017 \$,000)

Activity	Residents	Non-Residents	Total
Non-Consumptive	\$33.9	\$8.1	\$42.1
Hunting	\$101.3	\$89.2	\$190.5
Fishing	\$24.0	\$3.2	\$27.1
Total Expenditures	\$159.2	\$100.5	\$259.7

Table 3. Big Muddy NFWR: Local Economic Contributions Associated with Recreation Visits (2017 \$,000)

	Residents	Non-Residents	Total
Economic Output	\$273.5	\$170.7	\$444.2
Jobs	3	1	4
Job Income	\$106.9	\$62.7	\$169.5
State and Local Tax Revenue	\$14.0	\$9.2	\$23.2

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 eight activity visits to the refuge; yet, they are only four visitors.

References

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