

The Economic Contributions of Recreational Visitation at Tennessee National Wildlife Refuge

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This paper establishes the economic contribution baseline for recreational visitation at Tennessee 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, Tennessee 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

Tennessee National Wildlife Refuge, encompassing over 51,000 acres, is located on Kentucky Lake in northwest Tennessee. The Refuge’s three units: Big Sandy, Duck River and Busseltown stretch for 65 miles along the Tennessee River. Established in 1945, the refuge is one of the older refuges in the country. It is managed as an important resting and feeding area for wintering waterfowl. The Refuge also provides habitat for numerous resident wildlife species and other migratory birds.

The Refuge consists of a diversity of habitats including open reservoir waters, bottomland hardwoods, high quality oaks/hickory forests, freshwater marsh, agricultural lands and some of the largest and highest quality moist soil managed impoundments in the nation. The diversity of habitats found on the refuge units provide ample feeding, nesting and resting areas for 318 bird species, 54 types of mammals, 89 species of reptiles and amphibians, and 144 species of fish. A hotspot for fish diversity, this refuge can boast a greater fish species diversity than any other inland national wildlife refuge in the country.

In 2014, the Refuge built a state of the art Visitor Center complete with exhibit hall, nature book store, auditorium and environmental education classroom.

Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 367,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for about 159,000 visits with residents comprising 54 percent of Refuge visitation. Other recreational visits include canoeing, kayaking, horseback riding, and visitors to historic sites or cultural resource sites.

Table 1. Tennessee NWR: 2017 Recreation Visits

Activity	Residents	Non-Residents	Total
Non-Consumptive:			
Pedestrian	3,000	2,000	5,000
Auto Tour	38,500	16,500	55,000
Boat Trail/Launch	24,000	24,000	48,000
Bicycle	2,400	600	3,000
Photography	1,500	1,500	3,000
Interpretation	400	-	400
Other Recreation	17,500	17,500	35,000
Visitor Center	7,000	3,000	10,000
Hunting:			
Big Game	540	360	900
Small Game	225	25	250
Migratory Birds	158	18	175
Fishing:	103,000	103,000	206,000
Total Visitation	198,223	168,503	366,725

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

Regional Economic Analysis

The economic area for the Refuge includes Henry, Benton, Humphreys, and Decatur Counties in Tennessee. It is assumed that visitor expenditures occur primarily within these counties. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$15.6 million with non-residents accounting for \$10.7 million or 69 percent of total expenditures. Expenditures on fishing activities accounted for 52 percent of all expenditures.

Spending in the local area generates and supports economic activity within the four-county area (Table 3). The contribution of recreational spending in local communities was associated with about 216 jobs, \$5.7 million in employment income, \$1.3 million in total tax revenue, and \$18.1 million in economic output.

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

Activity	Residents	Non-Residents	Total
Non-Consumptive	\$1,266.4	\$6,100.1	\$7,366.5
Hunting	\$18.0	\$27.5	\$45.5
Fishing	\$3,518.6	\$4,619.7	\$8,138.3
Total Expenditures	\$4,803.0	\$10,747.2	\$15,550.3

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

	Residents	Non-Residents	Total
Economic Output	\$5,668.8	\$12,395.7	\$18,064.4
Jobs	71	145	216
Job Income	\$1,824.0	\$3,848.1	\$5,672.1
State and Local Tax Revenue	\$405.7	\$895.1	\$1,300.8

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

Minnesota IMPLAN Group, Inc. *IMPLAN System (2015 data and software)*.

U. S. Department of the Interior, U.S. Fish and Wildlife Service, Division of Federal Aid. 2013. *2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation*. Washington, D.C.

U.S. Department of the Interior, U.S. Fish and Wildlife Service, National Wildlife Refuge System. *Refuge Annual Performance Plan 2017*. Washington, D.C. Unpublished.

Varian, Hal R. 2010. *Intermediate Microeconomics: A Modern Approach*. 8th ed. New York: W.W. Norton & Company.