

# **The Economic Contributions of Recreational Visitation at Cross Creeks National Wildlife Refuge**

May 2019  
Division of Economics  
U.S. Fish & Wildlife Service

This paper establishes the economic contribution baseline for recreational visitation at Cross Creeks 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, Cross Creeks 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**

Established on November 9, 1962, Cross Creeks National Wildlife Refuge lies within the floodplain of the Cumberland River which is now Lake Barkley. When Lake Barkley was constructed the new reservoir flooded a majority of the now closed Kentucky Woodlands National Wildlife Refuge which had been established in 1938. Cross Creeks mission was to replace the loss of waterfowl habitat on both the Kentucky Woodlands Refuge as well as private lands along the river when Lake Barkley was impounded.

The Refuge’s name originates from the intersection of North Cross Creek and South Cross Creek on the refuge at its midpoint. The Refuge provides needed feeding and resting habitat for migrating waterfowl in the Tennessee-Kentucky portion of the Mississippi flyway.

The Refuge’s twelve mile long rich bottomlands along the Cumberland River are surrounded by the rolling hills and high rocky bluffs of Tennessee’s Western Highland Rim Physiographic Region. Hardwood forests comprised of oak, hickory, sugar maple, and ash make up one-third of its acreage with the remaining acres comprised of impounded water, wetlands, fields, and farmland.

## Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 69,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Fishing accounted for about 55,000 visits with residents comprising 61 percent of Refuge visitation.

**Table 1. Cross Creeks NWR: 2017 Recreation Visits**

Activity	Residents	Non-Residents	Total
<b>Non-Consumptive:</b>			
Pedestrian	300	200	500
Auto Tour	3,500	1,500	5,000
Boat Trail/Launch	2,500	2,500	5,000
Bicycle	200	50	250
Photography	100	100	200
Interpretation	200	-	200
Other Recreation	350	150	500
Visitor Center	350	150	500
<b>Hunting:</b>			
Big Game	510	340	850
Small Game	765	85	850
Migratory Birds	90	10	100
<b>Fishing:</b>	33,000	22,000	55,000
<b>Total Visitation</b>	<b>41,865</b>	<b>27,085</b>	<b>68,950</b>

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

## Regional Economic Analysis

The economic area for the Refuge is Stewart County, Tennessee. It is assumed that visitor expenditures occur primarily within this county. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$2.7 million with non-residents accounting for \$1.5 million or 54 percent of total expenditures. Expenditures on fishing activities accounted for 78 percent of all expenditures.

Spending in the local area generates and supports economic activity within Stewart County (Table 3). The contribution of recreational spending in local communities was associated with about 29 jobs, \$697,000 in employment income, \$215,000 in total tax revenue, and \$2.7 million in economic output.

**Table 2. Cross Creeks NWR: Visitor Recreation Expenditures (2017 \$,000)**

<b>Activity</b>	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Non-Consumptive	\$100.6	\$443.3	\$543.9
Hunting	\$22.3	\$27.9	\$50.2
Fishing	\$1,127.3	\$986.7	\$2,114.0
<b>Total Expenditures</b>	<b>\$1,250.2</b>	<b>\$1,457.9</b>	<b>\$2,708.2</b>

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

	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Economic Output	\$1,250.2	\$1,457.9	\$2,708.2
Jobs	15	15	29
Job Income	\$325.0	\$371.7	\$696.7
State and Local Tax Revenue	\$102.5	\$112.4	\$214.8

## 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*. 8<sup>th</sup> ed. New York: W.W. Norton & Company.