

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

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

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

Clarks River National Wildlife Refuge was established on June 19, 1997 becoming the 517th refuge in the National Wildlife Refuge System. The Refuge’s official purpose statement is "...for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. 742f (a) (4) and "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 16 U.S.C. 742f (b) (1) (Fish and Wildlife Act of 1956). For the first time since the establishment of Kentucky Woodlands NWR in 1938, and its disposal in 1969, the Commonwealth of Kentucky had a national wildlife refuge located entirely within its borders.

The original refuge acquisition boundary was approximately 19,605 acres. In 2010 a proposed expansion of 34,269 acres was approved, bringing the Refuge’s acquisition boundary to 53,874 acres, of which 9,356 acres have been acquired. The Refuge is comprised primarily of wetland forests, backwater sloughs, and open farmland with some fields of warm-season grasses and small amounts of upland forest. The East Fork of the Clarks River is comparatively slow-moving and subject to frequent, short duration, over-flow flooding from rainfall in the upper watershed. Backwater flooding is less common, but occurs when the Ohio or Tennessee Rivers reach flood stage. The wetland complexes present provide habitats that support a diverse bottomland forest and an abundance of wildlife resources.

The refuge lands consist of a mosaic of bottomland hardwood forest, xerohydric flatwoods, agricultural fields, and early successional forests. The forested communities provide quality habitat for a diversity of fish and wildlife species. The habitats found on the Refuge are used by over 240 species of migratory

birds, 84 species of reptiles and amphibians, and numerous species of mammals. The species occurrence data for the Refuge is based on very limited studies. Five of the natural communities are tracked as rare communities by Kentucky State Nature Preserves Commission (KSNPC) (2012): Bottomland Hardwood Forest, Bald Cypress Swamp, Marsh (also known as Bottomland Marsh), Open Swamp (also known by KSNPC as Bottomland Lake), and Xerohydric Flatwoods. Xerohydric flatwoods, perhaps the most ecologically significant natural feature of Clarks River NWR, is considered Endangered in the State and has a Critically Imperiled Nature Serve Global Status Rank according to KSNPC. The Refuge is considered to have one of the highest quality flatwoods remnant in the State.

One of the Refuge’s greatest contributions to conservation occurs through their well-executed education and outreach programs. Connecting people of all ages to nature through varying mediums creates awareness and appreciation. Refuge staff estimates that 50,000 use-days by members of the public occur annually. This is significant when considering the limited vehicular access, limited acres in Refuge ownership, and limited visitor service facilities currently present on the Refuge. In addition, the Refuge’s close proximity to numerous educational institutions and offers thousands of students and faculty the opportunities to connect to nature and the outdoors.

Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 54,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for about 33,000 visits with residents comprising 76 percent of Refuge visitation.

Table 1. Clarks River NWR: 2017 Recreation Visits

Activity	Residents	Non-Residents	Total
Non-Consumptive:			
Pedestrian	10,094	531	10,625
Auto Tour	3,075	3,075	6,150
Boat Trail/Launch	-	-	-
Bicycle	-	-	-
Photography	78	14	92
Interpretation	2,536	133	2,669
Other Recreation	7,443	827	8,270
Visitor Center	2,814	2,814	5,628
Hunting:			
Big Game	7,306	3,934	11,240
Small Game	948	237	1,185
Migratory Birds	3,028	1,239	4,267
Fishing:	3,800	200	4,000
Total Visitation	41,121	13,005	54,126

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

Regional Economic Analysis

The economic area for the Refuge is the three-county area of Graves, Marshall, and McCracken Counties in Kentucky. It is assumed that visitor expenditures occur primarily within these counties. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$1.6 million with non-residents accounting for \$919,000 or 57 percent of total expenditures. Expenditures on hunting activities accounted for 55 percent of all expenditures.

Spending in the local area generates and supports economic activity within the three county area (Table 3). The contribution of recreational spending in local communities was associated with about 24 jobs, \$691,000 in employment income, \$155,000 in total tax revenue, and \$2.2 million in economic output.

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

Activity	Residents	Non-Residents	Total
Non-Consumptive	\$238.7	\$395.5	\$634.2
Hunting	\$358.8	\$517.4	\$876.1
Fishing	\$86.5	\$6.0	\$92.5
Total Expenditures	\$684.0	\$918.8	\$1,602.9

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

	Residents	Non-Residents	Total
Economic Output	\$921.6	\$1,242.0	\$2,163.6
Jobs	10	13	24
Job Income	\$297.0	\$394.1	\$691.1
State and Local Tax Revenue	\$65.2	\$89.5	\$154.7

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.