

# **The Economic Contributions of Recreational Visitation at Bosque del Apache National Wildlife Refuge**

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

This paper establishes the economic contribution baseline for recreational visitation at Bosque del Apache 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, Bosque del Apache 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**

Bosque del Apache National Wildlife Refuge supports one of the most diverse and unique assemblages of habitat and wildlife within the Southwest. The 57,331-acre refuge is located in Socorro County, New Mexico at the northern edge of the Chihuahuan Desert. Eleven miles of the once wild but now tamed Rio Grande bisects the Refuge. The extraordinary diversity and concentration of wildlife in a desert environment draws people from around the world to observe and photograph wildlife. A comprehensive visitor services program provides opportunities for people to connect with nature and enjoy the American great outdoors.

The heart of the Refuge encompasses a variety of habitats, including floodplain forests, grasslands, managed wetlands, and agricultural fields. Through the restoration and preservation of historic floodplain habitats, the refuge is consistently successful at mimicking, in part the ecosystem processes of the once wild Rio Grande. The provided high-quality habitat supports hundreds of wildlife species both year-round and seasonally for those that migrate to and through these lands. Arid foothills and mesas, which rise to the Chupadera Mountains on the west and the Little San Pascual Mountain on the east, make up the remainder of the Refuge. The United States Congress preserved most of these uplands as Wilderness, which provides refuge visitors with opportunities for solitude, hunting and unconfined recreation.

Decades old partnerships with the Friends of the Bosque del Apache National Wildlife Refuge and the City of Socorro have fostered continued economic benefit for the American people. Estimated to generate over 3.5 million dollars for local economies, the annual Festival of the Cranes is the largest single economic generating event that takes place in Socorro County.

## Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 306,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for nearly all visits with residents comprising 5 percent of Refuge visitation. During October through May, the Refuge conducts interpretive van tours and interpretive hikes for the general public and also offers over 100 interpretive programs during the annual Festival of the Cranes held annually the week before Thanksgiving for the past 30 years.

**Table 1. Bosque del Apache NWR: 2017 Recreation Visits**

Activity	Residents	Non-Residents	Total
<b>Non-Consumptive:</b>			
Pedestrian	1,000	19,000	20,000
Auto Tour	4,392	83,451	87,843
Boat Trail/Launch	-	-	-
Bicycle	436	1,744	2,180
Photography	7,031	133,594	140,625
Interpretation	219	4,163	4,382
Other Recreation	1,181	4,724	5,905
Visitor Center	2,265	43,038	45,303
<b>Hunting:</b>			
Big Game	5	19	24
Small Game	8	32	40
Migratory Birds	1	5	6
<b>Fishing:</b>	19	3	22
<b>Total Visitation</b>	<b>16,557</b>	<b>289,773</b>	<b>306,330</b>

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

## Regional Economic Analysis

The economic area for the Refuge is Socorro County, New Mexico. It is assumed that visitor expenditures occur primarily within this county. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$15.8 million with non-residents accounting for \$15.5 million or 98 percent of total expenditures. Expenditures on non-consumptive activities accounted for almost all of expenditures.

Spending in the local area generates and supports economic activity within Socorro County (Table 3). The contribution of recreational spending in local communities was associated with about 181 jobs, \$4.0 million in employment income, \$2.4 million in total tax revenue, and \$17.4 million in economic output.

**Table 2. Bosque del Apache NWR: Visitor Recreation Expenditures (2017 \$,000)**

<b>Activity</b>	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Non-Consumptive	\$292.1	\$15,514.8	\$15,806.8
Hunting	\$0.3	\$5.6	\$5.9
Fishing	\$1.0	\$0.3	\$1.3
<b>Total Expenditures</b>	<b>\$293.4</b>	<b>\$15,520.6</b>	<b>\$15,814.0</b>

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

	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Economic Output	\$327.0	\$17,063.1	\$17,390.1
Jobs	4	177	181
Job Income	\$73.1	\$3,889.7	\$3,962.7
State and Local Tax Revenue	\$53.3	\$2,315.3	\$2,368.6

## 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

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.