

The Economic Contributions of Recreational Visitation at Shiawassee National Wildlife Refuge

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

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

The Refuge was authorized by the Migratory Bird Conservation Commission under the Migratory Bird Conservation Act (16 U.S.C. § 715 - 715s) “... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” Additional purposes designated under the Refuge Recreation Act (16 U.S.C. § 460k-1) are “... (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, [and] (3) the conservation of endangered and threatened species.”

When established in 1953, the Refuge and adjacent Shiawassee River State Game Area (SGA) and downstream Crow Island SGA were envisioned as providing a place where waterfowl from the Saginaw Bay area could be held longer before migrating to southern Illinois. Since its establishment, the Refuge has shown its importance to migrating waterfowl including Southern James Bay Canada geese, American black ducks, and production of cavity (such as wood ducks) and ground nesting species (such as mallards, blue-winged teal). The major habitat types in the refuge include emergent marsh, forested wetlands, prairie, and riverine areas. This diversity of habitats supports an abundance of plants, birds, mammal, reptile, amphibian, and fish species.

The Refuge also serves as important location for the public to engage in wildlife dependent recreation such as wildlife observation, photography, environmental education, interpretation, hunting, and fishing. For those that want to engage in wildlife observation, photography, and hiking, the refuge has four main hiking trail systems, ranging in length and difficulty. The Refuge also provides a 6.5-mile self-guided auto tour route. The Refuge’s Green Point Environmental Learning Center provides a central location for conducting environmental education and interpretation programs for the youth and adults of Saginaw and

surrounding communities. The Refuge is currently open to public deer, migratory bird, small game, and turkey hunting. In addition to some select bank fishing locations, fishing is permitted year-round on navigable waterways that flow through the Refuge.

Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 88,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for about 76,000 visits with residents comprising 92 percent of Refuge visitation.

Table 1. Shiawassee NWR: 2017 Recreation Visits

Activity	Residents	Non-Residents	Total
Non-Consumptive:			
Pedestrian	32,764	3,640	36,404
Auto Tour	13,821	2,439	16,260
Boat Trail/Launch	11,903	120	12,023
Bicycle	1,716	17	1,733
Photography	2,588	288	2,875
Interpretation	415	4	419
Other Recreation	2,523	25	2,548
Visitor Center	3,597	635	4,232
Hunting:			
Big Game	1,006	21	1,027
Small Game	-	-	-
Migratory Birds	128	3	131
Fishing:	10,406	212	10,618
Total Visitation	80,866	7,404	88,270

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

Regional Economic Analysis

The economic area for the Refuge is Saginaw County, Michigan. It is assumed that visitor expenditures occur primarily within this county. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$767,000 with non-residents accounting for \$114,000 or 15 percent of total expenditures. Expenditures on non-consumptive activities accounted for 72 percent of all expenditures.

Spending in the local area generates and supports economic activity within Saginaw County (Table 3). The contribution of recreational spending in local communities was associated with about 10 jobs, \$272,000 in employment income, \$80,000 in total tax revenue, and \$1.0 million in economic output.

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

Activity	Residents	Non-Residents	Total
Non-Consumptive	\$451.7	\$103.6	\$555.3
Hunting	\$24.1	\$1.2	\$25.3
Fishing	\$177.4	\$9.1	\$186.5
Total Expenditures	\$653.2	\$113.9	\$767.1

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

	Residents	Non-Residents	Total
Economic Output	\$838.0	\$146.5	\$984.5
Jobs	8	1	10
Job Income	\$233.1	\$38.6	\$271.7
State and Local Tax Revenue	\$67.0	\$13.0	\$80.0

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.