

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

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

Umbagog National Wildlife Refuge was established in 1992 as a result of a long term cooperative state, private, and federal conservation effort in Northern New Hampshire and Maine. An essential link in the network of conserved lands in the Northern Forest, Umbagog NWR manages wildlife habitat in a place where forests, lakes, rivers and wetland systems meet. The Refuge, a little over 37,000 acres in size, includes one of the largest inland freshwater wetland complexes in northern New England.

This Refuge was established to conserve and manage high quality wetland and upland habitat immediately adjacent to Umbagog Lake, benefiting migratory bird species like eagles, osprey, loons and waterfowl. The Refuge was expanded in 2009 to include a much larger upland forest component, with habitat management focused on forest landbird species of conservation concern.

With the confluence of multiple rivers, several ponds, Umbagog Lake and adjacent uplands recreational opportunities abound. Canoeing, kayaking, boating, camping, and fishing are popular summertime activities on the Refuge. The Refuge provides excellent remote hunting experiences. Winter activities include snowmobiling, cross country skiing, snowshoeing and ice fishing. Wildlife observation and photography are enjoyed all year long.

## Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 81,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for about 62,000 visits with residents comprising 34 percent of Refuge visitation. Other recreation activities includes snowmobiling and camping.

**Table 1. Umbagog NWR: 2017 Recreation Visits**

Activity	Residents	Non-Residents	Total
<b>Non-Consumptive:</b>			
Pedestrian	300	700	1,000
Auto Tour	-	-	-
Boat Trail/Launch	3,000	7,000	10,000
Bicycle	4	36	40
Photography	900	2,100	3,000
Interpretation	10	10	20
Other Recreation	13,800	32,200	46,000
Visitor Center	150	1,350	1,500
<b>Hunting:</b>			
Big Game	1,360	2,040	3,400
Small Game	1,160	1,740	2,900
Migratory Birds	496	664	1,160
<b>Fishing:</b>	6,000	6,000	12,000
<b>Total Visitation</b>	<b>27,180</b>	<b>53,840</b>	<b>81,020</b>

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

## Regional Economic Analysis

The economic area for the Refuge is the two-county area of Coos County, New Hampshire and Oxford County, Maine. It is assumed that visitor expenditures occur primarily within these counties. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$3.8 million with non-residents accounting for \$3.4 million or 88 percent of total expenditures. Expenditures on non-consumptive activities accounted for 73 percent of all expenditures.

Spending in the local area generates and supports economic activity within the two county area (Table 3). The contribution of recreational spending in local communities was associated with about 49 jobs, \$1.3 million in employment income, \$411,000 in total tax revenue, and \$4.6 million in economic output.

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

<b>Activity</b>	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Non-Consumptive	\$187.8	\$2,581.6	\$2,769.3
Hunting	\$83.4	\$326.5	\$409.9
Fishing	\$190.1	\$447.0	\$637.1
<b>Total Expenditures</b>	<b>\$461.3</b>	<b>\$3,355.0</b>	<b>\$3,816.3</b>

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

	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Economic Output	\$560.6	\$4,014.0	\$4,574.7
Jobs	7	43	49
Job Income	\$170.7	\$1,169.3	\$1,340.1
State and Local Tax Revenue	\$39.3	\$371.3	\$410.6

## 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 eight activity visits to the refuge; yet, they are only four visitors.

## References

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