

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

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

Bombay Hook National Wildlife Refuge is one of over 560 refuges located in the United States, protecting over 100,000,000 acres of land. The Refuge system provides a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans.

Stretching eight miles along Delaware Bay and covering over 16,200 acres, Bombay Hook National Wildlife Refuge provides habitat for wildlife. Four-fifths of the Refuge is tidal salt marsh with a mix of cordgrass meadows, mud flats, tidal pools, rivers, creeks, and tidal streams. The upland area includes forests, freshwater impoundments, brushy and timbered swamps, and fields of herbaceous plants.

This diversity of habitats is reflected in the diversity of animal life. The Refuge hosts large numbers of waterfowl in the fall and winter, migrating songbirds and shorebirds in the spring and late summer, and provides habitat for tall wading birds in the summer. Deer, red foxes, and beavers are found on the Refuge, as well as many species of turtles, insects, non-poisonous snakes, frogs, and salamanders.

The Refuge offers visitors a 12-mile auto tour, five walking trails (2 ADA accessible), three observation towers, hunting opportunities, educational programs, and interpretative displays.

## Activity Levels

Table 1 shows the recreation visits for the Refuge. The Refuge had about 166,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. Non-consumptive recreation accounted for about 83,000 visits with residents comprising 50 percent of Refuge visitation.

**Table 1. Bombay Hook NWR: 2017 Recreation Visits**

Activity	Residents	Non-Residents	Total
<b>Non-Consumptive:</b>			
Pedestrian	2,655	3,245	5,900
Auto Tour	42,075	51,425	93,500
Boat Trail/Launch	-	-	-
Bicycle	-	-	-
Photography	32,802	21,868	54,670
Interpretation	287	123	410
Other Recreation	-	-	-
Visitor Center	4,950	6,050	11,000
<b>Hunting:</b>			
Big Game	494	123	617
Small Game	-	-	-
Migratory Birds	311	35	345
<b>Fishing:</b>	-	-	-
<b>Total Visitation</b>	<b>83,573</b>	<b>82,869</b>	<b>166,442</b>

Source: Refuge Annual Performance Plan 2017 and Refuge Staff

## Regional Economic Analysis

The economic area for the Refuge is Kent County, Delaware. It is assumed that visitor expenditures occur primarily within this county. Visitor recreation expenditures for 2017 are shown in Table 2. Total expenditures were \$3.9 million with non-residents accounting for \$3.3 million or 84 percent of total expenditures. Expenditures on non-consumptive activities accounted for 99 percent of all expenditures.

Spending in the local area generates and supports economic activity within Kent County (Table 3). The contribution of recreational spending in local communities was associated with about 48 jobs, \$1.6 million in employment income, \$332,000 in total tax revenue, and \$5.3 million in economic output.

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

<b>Activity</b>	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Non-Consumptive	\$606.7	\$3,312.2	\$3,918.9
Hunting	\$17.0	\$8.2	\$25.3
Fishing	-	-	-
<b>Total Expenditures</b>	<b>\$623.8</b>	<b>\$3,320.4</b>	<b>\$3,944.2</b>

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

	<b>Residents</b>	<b>Non-Residents</b>	<b>Total</b>
Economic Output	\$832.2	\$4,474.8	\$5,307.0
Jobs	8	40	48
Job Income	\$253.0	\$1,324.5	\$1,577.5
State and Local Tax Revenue	\$52.0	\$279.6	\$331.6

## 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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