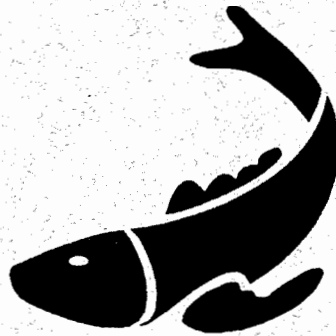
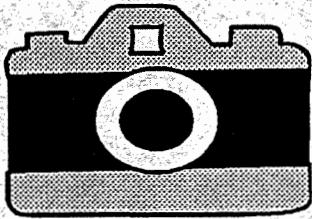
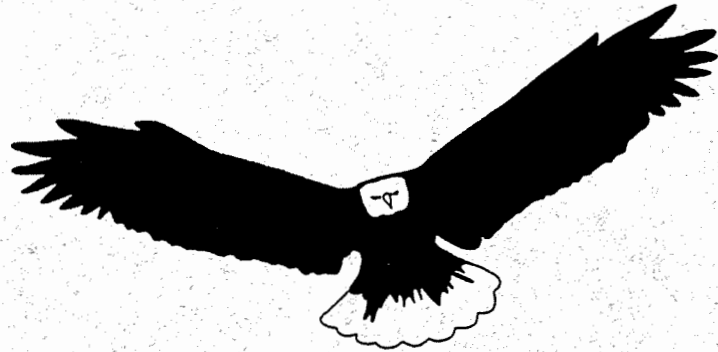


1991 National Economic Impacts of Nonconsumptive Wildlife-Related Recreation



Division of Economics
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Department of the Interior
January 1997

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Based on the 1991 National Survey of Fishing, Hunting and
Wildlife-Associated Recreation

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Introduction

The 1991 National Survey of Fishing, Hunting and Wildlife-Associated Recreation (FHWAR) (U.S. Department of the Interior et. al.) reports results about respondents' fishing, hunting and other fish and wildlife-related recreation. The survey focuses on 1991 participation and expenditures by U.S. residents 16 years of age or older.

Two previous reports used the 1991 FHWAR to address the national economic impacts of hunting and fishing¹. This report estimates the national economic impacts of **nonconsumptive** wildlife-related recreation (wildlife watching) in the U.S. based on the 1991 FHWAR. The following topics are addressed: (1) national participation in wildlife watching; (2) expenditures associated with participation in wildlife watching; (3) estimates of the total economic activity generated by these expenditures; (4) total employment and employment income associated with these expenditures and (5) estimates of associated federal and state tax revenue.

Participation in Wildlife Watching

Wildlife-related recreation is one of the most popular forms of recreation in the United States. In 1991, annual participants in hunting, fishing and wildlife watching totaled over 109 million. By comparison, total attendance for all major league baseball, football, basketball and hockey games in the U.S. numbered about 106 million in 1991 (U.S. Bureau of the Census, p.258).

Over 76 million people participated in some form of wildlife watching, which refers to nonharvesting activities such as observing, feeding and photographing wildlife. The figure of 76 million includes only **primary** participants in wildlife watching. Primary means that the principal motivation for the trip, activity or expenditure is wildlife-related. Primary participation is further categorized as **residential** or **nonresidential**. Primary **residential** participants include those whose activities² are within one mile of home and primary **nonresidential** participants refers to people who take trips or outings of at least one mile for the primary purpose of observing, feeding, or photographing wildlife or fish. Trips to zoos, circuses, aquariums and museums are not considered wildlife watching.

¹ See *The Economic Benefits of Hunting in the United States in 1991*, Southwick Associates, Arlington VA, September 1994; and *The 1991 Economic Impact of Sport Fishing in the United States*, Anthony J. Fedler and David M. Nickum, Sport Fishing Institute, Washington D.C., 1993.

² These activities include one or more of the following: (1) closely observing or trying to identify birds or other wildlife; (2) photographing wildlife; (3) feeding birds or other wildlife on a regular basis; (4) maintaining natural areas of at least one-quarter acre for which benefit to wildlife is the primary purpose; (5) maintaining plantings (shrubs, agricultural crops, etc.) for which benefit to wildlife is the primary concern; or (6) visiting public parks within one mile of home for the primary purpose of observing, feeding, or photographing wildlife (p.3, U.S. Department of the Interior et. al. 1993).

The Economic Impacts of Wildlife Watching

Spending associated with wildlife watching generates a substantial amount of economic activity across the U.S. Participants spend money on a wide variety of goods and services. Trip-related expenditures for nonresidential participants include expenses for food, lodging, and transportation. Equipment and related expenditures by both residential and nonresidential participants for the primary purpose of engaging in wildlife watching includes spending on items such as binoculars, cameras, wild bird food, membership in wildlife organizations, camping equipment, motor homes, campers, and off-road vehicles.

This spending directly benefits towns and communities where these purchases are made. Wildlife watching can have a significant impact on local economies, especially in small towns and rural areas. For example, the town of High Island, near Galveston, Texas, is a prime bird-watching site each spring as migrating songbirds concentrate in the area after their journey across the Gulf of Mexico. In 1992, 6,000 birdwatchers from across the U.S. and several foreign countries spent about \$2.5 million dollars in the area, despite there being only one restaurant and one hotel in the area (Dickinson and Edmondson, p.47).

These direct expenditures are only part of the total picture, however. Those businesses and industries that supply the local retailers where the purchases are made also benefit from nonconsumptive recreation expenditures. For example, a family may decide to purchase a pair of binoculars to use primarily for birdwatching on an upcoming vacation. Part of the total purchase price will go to the local retailer, say a sporting goods store. The sporting goods store in turn pays a wholesaler that in turn pays the manufacturer of the binoculars. The manufacturer then spends a portion of this income to pay businesses supplying the manufacturer.

In this fashion, each dollar of local retail expenditures can affect a variety of businesses at the local, regional and national level. Consequently, consumer spending associated with wildlife watching can have a significant impact on economic activity, employment and household income across the nation.

Methodology

The 1991 FHWAR contains estimates of annual travel and equipment expenditures by nonconsumptive participants. Travel expenditures were obtained only for nonresidential participants³ while equipment expenditures were obtained for both residential and nonresidential participants. These expenditures were used in conjunction with an economic modeling method known as *input-output analysis*⁴ to estimate total economic activity including the number of jobs and job-related income associated with these expenditures.

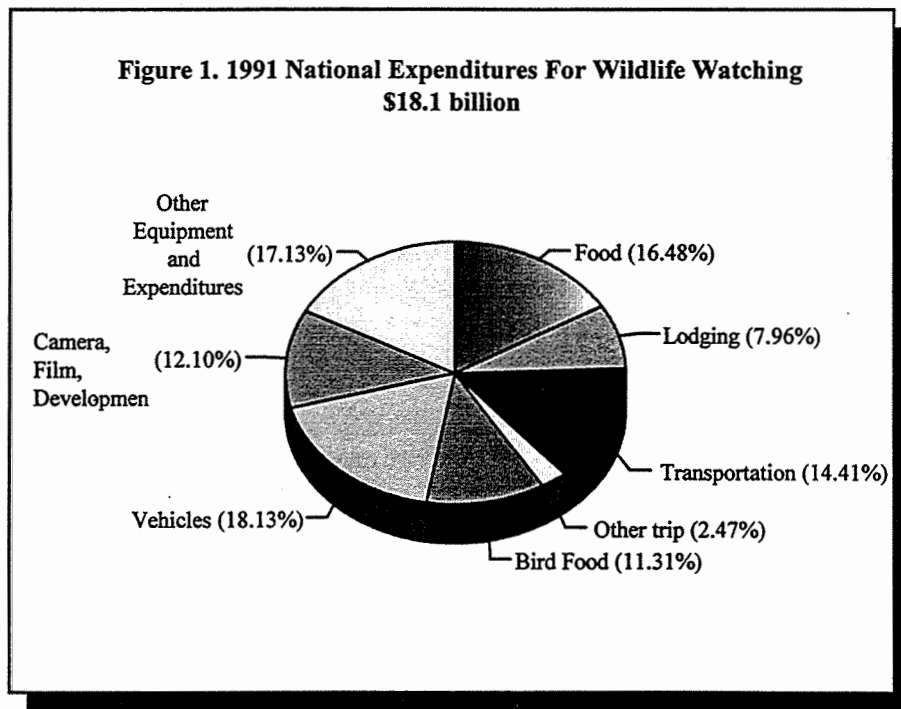
³ Theoretically, residential participants would not have any travel expenses since all wildlife associated activity took place within one mile of their home

⁴ The estimates of total economic activity, employment and employment income in this report were derived using IMPLAN, a regional input-output model and software system. For additional information, see Taylor et. al., *Micro IMPLAN User's Guide* and MIG, Inc. *MIG Technical Analysis Guide*. For additional information on input-output modeling, see Miller and Blair *Input-Output Analysis*.

State and federal tax impacts were estimated using national averages based on Southwick Associates and Fedler and Nickum. Using national averages to calculate sales and income tax effects of nonconsumptive expenditures is less accurate than the methods used in these reports. However, given that state-by-state expenditure impacts were not calculated for wildlife watching, using national averages gives a fairly representative "ballpark" estimate of state and federal tax impacts.

Direct Expenditures

Figure 1 below summarizes major expenditure categories compared with total 1991 expenditures.



Total direct expenditures by participants were \$18.1 billion in 1991. Trip related expenditures accounted for about \$7.5 billion (41.3 percent of total expenditures). Food and drink accounted for 39.9 percent of total travel-related expenditures and transportation and lodging accounted for 34.9 and 19.3 percent, respectively.

Equipment and other expenditures accounted for \$10.6 billion (58.7 percent of total expenditures). Off-road vehicles, tent trailers, motor homes and pick-up trucks accounted for almost 31 percent of total equipment and other expenditures. Commercially prepared wild bird food accounted for 14.5 percent of equipment and related expenditures, while film purchases (including developing) and cameras accounted for 10.4 and 10.2 percent, respectively.

Table 1 summarizes nationwide expenditures for wildlife watching in 1991.

Table 1. Nation-wide Expenditures for Wildlife Watching: 1991

Category	Total Expenditures (in thousands)	Percent of Category Expenditures	Percent of Total Expenditures
Trip-related Expenditures:			
Food, Drink	\$2,984,194	39.9 %	16.5 %
Lodging	\$1,440,631	19.3 %	8.0 %
Public Transportation	\$665,842	8.9 %	3.7 %
Private Transportation	\$1,943,499	26.0 %	10.7 %
Guide Fees	\$198,171	2.6 %	1.1 %
Public Land Access	\$129,969	1.7 %	0.7 %
Private Land Access	\$31,100	0.4 %	0.2 %
Equipment Rental	\$88,668	1.2 %	0.5 %
Total Travel Expenditures	\$7,482,073	100 %	41.3 %
Equipment Expenditures:			
Binoculars	\$372,590	3.5 %	2.1 %
Film/Developing	\$1,105,067	10.4 %	6.1 %
Cameras	\$1,085,357	10.2 %	6.0 %
Day Packs, Carrying Cases	\$406,502	3.8 %	2.2 %
Commercially Prepared			
Wild Bird Food	\$1,540,645	14.5 %	8.5 %
Other Bird Food	\$507,320	4.8 %	2.8 %
Boxes, Bird Houses	\$468,061	4.4 %	2.6 %
Magazines Devoted to			
Wildlife	\$320,900	3.0 %	1.8 %
Organization Membership	\$741,140	7.0 %	4.1 %
Other	\$224,001	2.1 %	1.2 %
Tents	\$140,802	1.3 %	0.8 %
Frames, Packs	\$61,761	0.6 %	0.3 %
Other Camping Equipment	\$147,423	1.4 %	0.8 %
Vehicles, Off-Road	\$1,509,326	14.2 %	8.3 %
Tent Trailers, Motor			
Homes, Pick-Ups	\$1,772,904	16.7 %	9.8 %
Other	\$224,001	2.1 %	1.2 %
Total Equipment Expenditures	\$10,621,813	100 %	58.7 %
Total Wildlife Watching Expenditures	\$18,103,887		100 %

Total Economic Activity

The direct expenditures of \$18.1 billion in 1991 generated \$39.9 billion in total economic activity across the U.S. Total economic activity includes the direct, indirect and induced effects⁵ of wildlife watching. The ratio of total economic activity to direct expenditures, \$2.20, means that for each \$1 of direct spending associated with wildlife watching, an additional \$1.20 of economic activity is generated. The financial and service industries accounted for \$13.9 billion of total activity (34.8 percent), manufacturing accounted for \$10.8 billion (27.1 percent), wholesale and retail trade comprised \$6.3 billion (15.8 percent), retail food services \$4.3 billion (10.8 percent), transportation and communication accounted for \$2.2 billion (5.5 percent) and hotels and other lodging places accounted for \$1.5 billion (3.8 percent).

Employment and Employment Income

The total economic activity of \$39.9 billion resulted in 766,000 jobs (full and part time) with total wages and salaries of \$17.6 billion. This resulted in an average annual salary of \$22,977 per job. Major industrial sectors affected include the finance and services industries, which accounted for 260,000 jobs (33.9 percent of total employment); retail food services, 147,000 jobs (19.2 percent); wholesale and retail trade 126,000 jobs (16.5 percent); manufacturing 123,000 jobs (16.1 percent) and hotel and lodging places 45,000 jobs (5.9 percent).

Federal and State Taxes

Wildlife watching expenditures generate taxes at both the state and federal level in a couple of ways. First, direct and indirect expenditures generate state sales tax (except in those states without sales tax). Second, employment earnings are taxed at both the state (with the exception of states which do not tax income) and federal levels. Based on 1991 expenditures on wildlife watching, associated total economic activity, and associated employment and employment income, taxes are estimated as follows: (1) total state sales tax: \$724 million; (2) state income tax: \$211.2 million; and (3) federal income tax: \$2.0 billion.

Summary

Wildlife based recreation in the U.S. has significant economic impacts at the local, regional, state and national levels. Hunting, fishing and wildlife watching generated over \$144 billion in total economic activity in 1991. Wildlife watching is a significant portion of this total and its continued popularity gives evidence to the importance that people attach to diverse, accessible and robust wildlife and fish populations.

⁵ **Direct effects** are production changes associated with the immediate effects of changes in final demand (in this case, changes in wildlife associated expenditures); **indirect effects** are production changes in those industries which supply the inputs to industries directly affected by final demand; **induced effects** are changes in regional household spending patterns caused by changes in regional employment (generated from the direct and indirect effects) (Taylor et. al., Appendix E, p. E-1).

SUMMARY OF NATIONAL ECONOMIC IMPACTS OF WILDLIFE WATCHING: 1991	
Participation	76.1 million
Total Expenditures	\$18.1 billion
Total Economic Activity	\$39.9 billion
Employment	766,000 jobs
Employment Income	\$17.6 billion
State Sales Tax	\$724 million
State Income Tax	\$211 million
Federal Income tax	\$2 billion

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