



## Analysis

# Outdoor Recreation as a Sustainable Export Industry: A Case Study of the Boundary Waters Wilderness



Evan E. Hjerpe

Conservation Economics Institute, Boise, ID, USA

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## ABSTRACT

The Boundary Waters Canoe Area Wilderness (BWCAW) in northeastern Minnesota contains more than a million acres of connected lakes and rivers. As one of the most heavily visited U.S. Wilderness areas, the BWCAW represents an ecosystem managed primarily for conservation values that also has a substantial regional economic impact. This combination of high visitation and strong conservation management represents a sustainable symbiotic relationship where visitor expenditures help maintain ecosystem protection. To investigate this symbiotic relationship, the regional economic impacts of the BWCAW were estimated. Multiplier effects were calculated and the sustainability and tradeoffs associated with BWCAW tourism were examined, as was the export nature of BWCAW recreation. Data collection consisted of surveying 2016 summer BWCAW visitors. Visitor regional expenditures were extrapolated to overall visitation data and entered into IMPLAN impact analysis software. Based on 513 completed surveys, and an overall survey response rate of 40%, out-of-region visitors spent over \$56 million in the three counties surrounding the BWCAW in 2016, generating \$78 million in total economic output and creating 1100 full and part-time jobs. Estimated economic impacts of outdoor recreation and their sustainability can be helpful for informing regional economic development policy for conservation areas world-wide.

## 1. Introduction

Ecosystem conservation yields numerous economic benefits by providing for biodiversity, water filtration, and recreation on protected lands. Ecosystem conservation also avoids environmental degradation that might come from the exploitation of raw materials. Many of the economic benefits of ecosystem conservation are not traded directly in the market, resulting in the provision of both market and nonmarket goods and services. Nonmarket values are often the primary justification of conservation, such as the case with American Wilderness areas, but market impacts can be substantial for conserved areas that attract tourists. In conservation areas with high visitation, tourism and conservation combine for a sustainable symbiotic relationship where market impacts help maintain ecosystem protection (Boley and Green, 2016). A good example of this symbiotic relationship is the majestic Boundary Waters Canoe Area Wilderness and its surrounding gateway communities in Northeastern Minnesota.

The sustainability of nature tourism sets it apart from resource extraction development where boom and bust cycles have been the norm (Jacobsen and Parker, 2016). But the sustainability of economic impacts is not modeled in economic impact analysis and requires separate

evaluation and acknowledgement. While nature tourism can have adverse ecological and social impacts if not properly regulated (Howe et al., 1997), the annual attraction of visitors can provide for economic activities in surrounding gateway communities that can theoretically continue on and on (Dixon and Sherman, 1990).

While outdoor recreation in the U.S. has continued to grow (White et al., 2016), the role of protected public lands in overall visitation and expenditure trends has seen decreasing focus in the academic and research worlds (Holmes et al., 2016). New calls for privatizing U.S. public lands have rekindled classic “jobs versus the environment” conflicts. From a scientific standpoint, there is need for greater investigation of the role that protected public lands play in adjacent regional economies. Federal officials have taken notice of the need to further illustrate both the economic benefits and impacts associated with public lands, and have called for more research on outdoor recreation economics.<sup>1</sup>

Designated Wilderness areas in the U.S. represent a unique type of protected public lands, as they are afforded the greatest protection and are typically in more remote areas with limited commercialization. Wilderness areas collectively provide for substantial national economic contributions, estimated to be over \$700 million in total output (Hjerpe

E-mail address: [evan@conservationecon.org](mailto:evan@conservationecon.org).

<sup>1</sup> Sally Jewel, U.S. Secretary of the Interior, 4/19/16, Press Release available at: [www.doi.gov/pressreleases/secretary-jewell-offers-vision-next-100-years-conservation-america](http://www.doi.gov/pressreleases/secretary-jewell-offers-vision-next-100-years-conservation-america).

et al., 2016). But due to the typically restrictive economic geography of Wilderness areas, overall visitation and opportunities for recreation-related spending are lower in the most protected public lands as compared to other public and private outdoor recreation venues.<sup>2</sup> In most regions, outdoor recreation on public lands is one of multiple land uses in the region that often include resource extraction of timber and minerals. The balancing of multiple uses is supported by planning efforts that typically include the economic impacts of the various uses (e.g., Environmental Impact Statements). In many cases, detailed estimates of timber and mining economic impacts are available, but research on the regional economic impacts of outdoor recreation is often not available. This is the case with the Boundary Waters Canoe Area Wilderness (hereafter BWCAW), which covers one million acres on the Superior National Forest in Northeastern Minnesota.

In this study, we examine the regional economic impacts of Boundary Waters visitors to adjacent communities. Because the BWCAW represents a type of Wilderness area characterized by high visitation<sup>3</sup> and a focus on canoeing, the Boundary Waters makes for an interesting Wilderness case study. The economic impacts of recreation in the BWCAW are currently unknown, while extractive uses in the larger region such as mining are well documented and included in planning documents. Given the importance of BWCAW recreation to regional outfitting and service businesses and to gateway communities, it is prudent to quantify the overall impacts so as to illustrate the regional economic dependencies. To address this, we conduct a regional economic impact analysis, which traces the backward linkages and net regional effects of tourist expenditures (Watson et al., 2007). BWCAW visitors in 2016 were surveyed to determine their regional expenditures and impacts in regional output, employment, income, and value added were calculated using IMPACT analysis for PLANning (IMPLAN) software. Economic impacts of outdoor recreationists in the BWCAW can be helpful for future public lands planning efforts and can inform regional development strategies.

### 1.1. Literature Review

Economic impact analysis (EIA) is a method for understanding how gateway communities are affected by visitor expenditures. As tourists come to the BWCAW, businesses located in surrounding communities such as Ely, Tofte, and Grand Marais provide lodging, outfitting, and guiding services for trips into the Wilderness. Though largely seasonal in nature, tourist spending associated with a Boundary Waters trip generates substantial employment and income in adjacent towns (Lichty and Steinnes, 1982).

Visitor surveys are the best way to determine the amount of regional spending associated with a Wilderness trip. Expenditure data can be collected with surveys and analyzed in an Input-Output (I-O) matrix. The I-O model was developed by Wassily Leontief, a Harvard economist, and is predicated on a balancing matrix where all individual industries are both a buyer and seller of goods and services (Isard et al., 1998). Leontief's inverse represents the scalar vectors in the matrix from individual businesses in terms of output (Miller and Blair, 2009). The sector contributions can be analyzed to illustrate backward linkages associated with the production of final goods. For example, visitor expenditures at Boundary Waters area restaurants are for the dining experience, while the restaurant must purchase raw materials (food), electricity, and cleaning services to provide the dining experience. Regional I-O models delineate how much of the food and services needed for production are purchased locally.

<sup>2</sup> Protected lands in the U.S. are at the lowest end of soil productivity and the highest end of elevation (Aycrigg et al., 2013), leading to an economic geography that results in a comparative disadvantage to more urban areas when considering industrial output and employment. However, this harsh and remote economic geography generates a countering influx of market investments from amenity migrants and entrepreneurs wanting to relocate to areas with higher percentages of public lands. The focus of this article is on economic impacts from tourist expenditures, but we acknowledge other regional economic contributions that result from amenity migration.

<sup>3</sup> The BWCAW is estimated to be the most heavily visited Wilderness area in the U.S. with approximately 150,000 annual visits.

The direct effects are represented by visitor purchases of food and beverages. The backward linkages, in terms of accounting for the local goods and services purchased by the restaurant to produce the dining experience, represent the indirect effects. Recirculation of the wages from restaurant workers in the community is known as the induced effect. Direct, indirect, and induced effects are combined for a presentation of total effects and can be divided to represent multiplier effects. Because each industry requires different amounts and types of backward linkages, and because each industry pays different wages, each sector has unique indirect and induced effects. The modern multiplier (e.g., Type SAM) endogenizes household and government spending into the I-O framework and is calculated as the ratio of total effects to direct effects and can be illustrated for industries in terms of output, employment, labor income, taxes, and value added (Loomis and Walsh, 1997).

The estimation of the backward linkages and regional multipliers associated with Wilderness visitation has been few. In fact, we are only aware of one published economic impact analysis of Wilderness visitor expenditures — Keith and Fawson's (1995) study of regional expenditures from visitors to four Utah Wilderness areas. Keith and Fawson (1995) found regional expenditures of \$30 to \$40 per person per day at nearby businesses. Others have examined the economic impacts of wildland-based recreation activities (e.g., Moisey and Yuan, 1992; Yuan and Christensen, 1994), finding similar per day expenditures. Rudzitis and Johnson (2000) and Rosenberger and English (2005) have summarized existing economic impact studies on Wilderness area visitation and have detailed considerations for conducting Wilderness economic impact analyses.

On the other hand, there have been many estimates of the economic impacts of outdoor recreation in general (e.g., Bergstrom et al., 1990; Loomis and Walsh, 1997; Clawson and Knetsch, 2013). Nationally, outdoor recreation services have been estimated to be a \$887 billion annual industry in the U.S.<sup>4</sup> with increasing trends expected in both participation and total recreation-related expenditures (White et al., 2016). While only a small portion of this output is generated from Wilderness visitation, much of the estimated recreation economic impacts stem from the use of protected public lands. Carver and Caudill (2013) estimated overall visitation and regional economic impacts for U.S. Fish and Wildlife Service lands, finding that some 47 million visitors to refuges in 2011 spurred approximately \$2.5 billion of regional output. On National Forest System lands, the National Visitor Use and Monitoring (NVUM) program involves extensive surveying of visitors to protected public lands including recording regional expenditures. Multiple rounds of NVUM monitoring have resulted in a number of economic impact profiles for various outdoor recreation activities (e.g., White and Stynes, 2008) and indicate the importance of outdoor recreation on protected public lands.

Recreation in the BWCAW, as indicated by the name, is primarily canoeing and boating on some of the myriad lakes in the Boundary Waters. While hiking, skiing, and dog mushing also occur in the BWCAW, the majority of visitor activities are related to paddling, fishing, and camping (Dvorak et al., 2012). As boating requires a bit more gear and accommodations than traditional Wilderness recreational activities of hiking and backpacking, we expect regional Boundary Waters visitor economic impacts to be greater than impacts in most other regions surrounding Wilderness areas (the exceptions may be Western Wilderness areas with seasonally intense multi-day horse packing or rafting trips). Lichty and Steinnes (1982) examined the economic impacts of tourism in Ely, MN, adjacent to the Boundary Waters by surveying local businesses to determine their total sales to residents and non-residents. They found over \$13 million of total output, when including indirect and induced effects, was generated by tourism spending in Ely.

Other boating-related regional EIAs have been conducted, including a recent examination of canoeing in the Northeastern U.S. Pollock et al. (2012) looked at regional economic impacts of canoeing on the

<sup>4</sup> Outdoor Industry Association estimate at: [https://outdoorindustry.org/wp-content/uploads/2017/04/OIA\\_RecEconomy\\_FINAL\\_Single.pdf](https://outdoorindustry.org/wp-content/uploads/2017/04/OIA_RecEconomy_FINAL_Single.pdf).

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