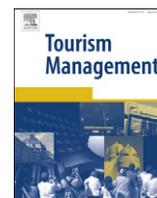




Contents lists available at SciVerse ScienceDirect

Tourism Management

journal homepage: www.elsevier.com/locate/tourman

Case study

The economic consequences of community support for tourism: A case study of a heritage fish hatchery

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ARTICLE INFO

Article history:

Received 28 October 2011

Accepted 6 April 2012

Keywords:

Attractions
Economic impact
Community support
Local citizens
Tourism
Black Hills
South Dakota

ABSTRACT

Although tourist attractions are the drivers of tourism to many communities, and local citizens' support of these attractions is vital to their viability, the economic outcomes of such support have never been assessed. To help fill this information void, the authors examined the unusual case of a historical attraction that was closed in 1983 by the federal government agency operating it but resurrected the following year by local citizens who considered it indispensable to their town's identity, cultural heritage, and tourist appeal. Since the attraction would not exist but for this intervention, the current value of the community's resuscitation of it in 1984 was inferred from the economic impacts it currently generated. In 2007 these were estimated to be about US\$1.6 million in direct attraction-related expenditures in the town, US\$2.1 million in business revenues, US\$629,000 in personal income, US\$141,000 in local and state taxes and fees, and 27 new jobs.

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1. Introduction

The success of tourism in any community requires the support of that community's residents (Gursoy & Rutherford, 2004). Such individuals are an integral part of the tourism product and the hospitality they extend or do not extend to visitors directly affects visitors' satisfaction, expenditure levels, and propensities to visit again and recommend the destination to others. Consequently, support for tourism among members of host communities cannot, without consequences, be assumed or taken for granted.

Since attractions drive tourism to many destinations, community support for tourism must extend to existing or proposed attractions in these destinations. The importance of such support is amply illustrated by what can happen if it is absent. To cite a couple of extreme examples, in 1994 the Walt Disney Company canceled a \$625 million, 1215-ha American heritage theme park ("Disney's America") it had proposed for Prince William County, Virginia because of fierce opposition from local residents concerned about potential urban sprawl, traffic congestion, pollution, increased taxes, encroachment on a nearby Civil War battlefield, and

"imagineering" of the historical record (Hawkins & Cunningham, 1996; Zenzen, 1998). Similarly, in the 1980s foreign developers of the Anuha Island Resort in the Solomon Islands failed to consult with the indigenous Melanesian community with respect to their development plans and ignored the natives' traditions, especially with respect to customary rights to land. The result was hostile confrontations, the complete dismantling of the resort, repossession of the island by the local community, and a diplomatic row between Australia and the Solomon Islands (Sofield, 1996).

Community support of tourist attractions often involves directly aiding their operations, especially when the attractions contribute significantly to the economic vitality, cultural heritage, and/or brand identity of the area (LaPage, 1994; Pritchard, 1980; Swarbrooke, 1999). In some cases, such support takes the form of wealthy benefactors "adopting" the attraction; in other cases, it crystallizes more broadly as "friends groups" whose members contribute their time and/or money to the operation of the attraction. Regardless of its manifestation, community support is sometimes critical to an attraction's sustainability because of the severe fiscal constraints facing attraction managers (Malcolm, 2011).

Although numerous studies conducted over many years have estimated the economic impact of attractions (e.g., Bergstrom, Cordell, Watson, & Ashely, 1990; Bowker, Bergstrom, & Gill, 2007; Canadian Outdoor Recreation Research Committee, 1975; Cela, Lankford, & Knowles-Lankford, 2009; Choi, Ritchie, Papandrea, &

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Bennett, 2010; Dean, Getz, Nelson, & Siegfried, 1978; Kim, Wong, & Cho, 2007; Mayer, Muller, Woltering, Arnegger, & Job, 2010; Montenegro, Huaquin, & Herrero, 2009; Mules, 2005; Shackley, 2006; van Beukering, Cesar, & Janssen, 2003; Var, Cheng, & Oh, 2004; Viu, Fernandez, & Caralt, 2008), no studies to date have specifically focused on the economic value of *community support* of attractions, based on thorough searches of the SCOPUS and EBS-COhost Hospitality & Tourism Index literature databases. Thus, from an economic perspective, these labors of love are worked in darkness. Yet community members are much more likely to support tourist attractions if they clearly understand the benefits they derive, and not just the costs they incur, from such facilities.

The purpose of this article is to shed some light on this phenomenon by reporting on a case study, the unusual circumstances of which permitted an economic valuation of community support of an attraction that would not exist today but for such support. The lack of literature specifically dealing with this phenomenon, the heavy commitments of resources that communities sometimes make in sustaining key attractions in their areas, and the heightened possibility that an increasing number of communities will be forced to aid or even assume the operation of attractions in their vicinities as economic stagnation shrinks government budgets in many parts of the world, justify the study.

In the next section a conceptual framework of community support of tourist attractions, within which the study was delimited, is presented. This is followed by sections on the background of the case, the nature and scope of the study, methods, findings, conclusions, and suggestions for further research.

2. Conceptual framework

Although no consensus exists on the definition of a “tourist attraction” (Swarbrooke, 1995), most authors (e.g., Goeldner & Ritchie, 2009; Swarbrooke, 1999; Weaver & Lawton, 2010) include events in their conceptualizations of attractions. However, the focus of this article is entirely on attractions that are sites as opposed to events. Clearly, both types of attractions lure tourists to most communities but events differ fundamentally from sites because visitation is concentrated within narrow temporal and spatial boundaries. Moreover, community support of sites requires longer-term commitments of resources than does events. For these reasons, the word “attraction” hereinafter refers strictly to sites.

A model of the antecedents, manifestations, and outcomes of community support of tourist attractions is presented in Fig. 1. The model serves to illustrate the complexity of this phenomenon, delineate which aspects of it were investigated in this study and which were not, distinguish the present inquiry from other economic impact studies, and help identify topics for further research in this area.

The various antecedents, manifestations, and outcomes are denoted by character strings that begin with letters; the influences they exert upon one another are denoted by numbers. These symbols are referenced in parentheses below. Model elements described in a plain font with a dark gray background were documented by the historical record of the case (Ross, 1996; *The History of the Booth Society*, 2010; U.S. Fish and Wildlife Service, 2011a); elements described in a plain font with a light gray background

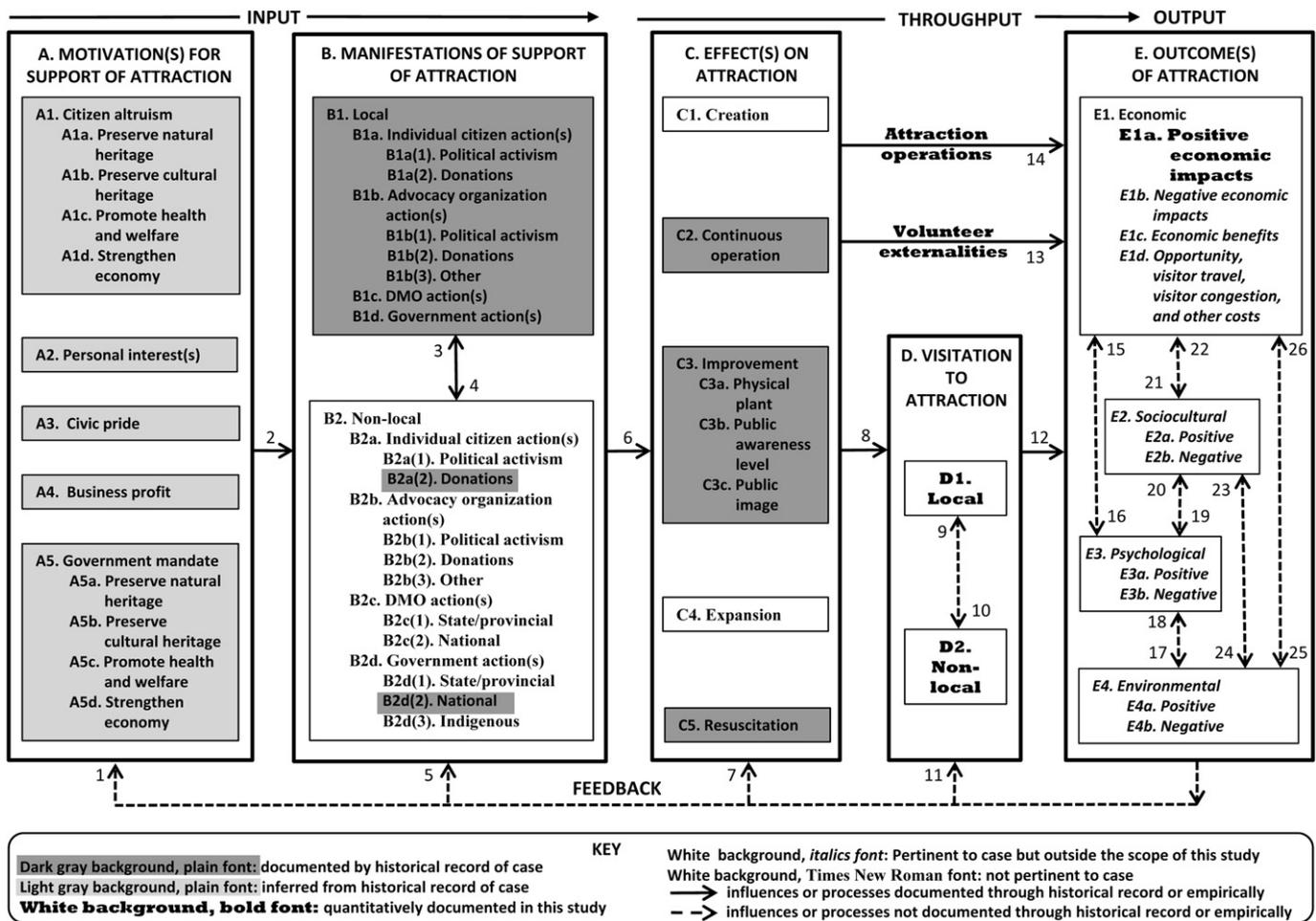


Fig. 1. A conceptualization of the antecedents, manifestations, and outcomes of community support of tourist attractions.

were inferred from the historical record; elements described in bold font with a white background were quantitatively documented in the study described below; elements described in italics with a white background were pertinent to the case but outside the scope of the study; elements described in Times New Roman font with a white background were not pertinent to case. The solid arrows represent influences or processes that were documented either through the historical record or empirically through the study; dashed arrows represent influences or processes that were not thus documented.

Community members' motivations for supporting an attraction (A) were inferred from various studies. Rhoden, Ineson, and Ralston (2009) found that volunteers' initial motivations for working at a heritage railway attraction included altruism and various personal interests, including finding a substitute for work, experiencing relaxation and change, doing something practical and physical, working in a team, pursuing a hobby, and employing and transmitting one's skills. Additional motivations were inferred from findings on the benefits local residents ascribe to government-operated parks in their areas, including: helping to conserve natural qualities in the area, attracting tourism revenues, and enhancing civic pride (Stein, Anderson, & Thompson, 1999); providing opportunities for learning, nature appreciation, exercise, and family togetherness (Davenport & Anderson, 2005); and providing income, additional fire protection, and recreational, cultural, and job opportunities (Manning, 1990). Based on all of the above findings, motivations for community support of tourist attractions were posited to include citizen altruism (A1), personal interest(s) (A2), civic pride (A3), business profit (A4), and government mandate (A5).

It was further posited that both citizens and governments may be motivated by desires to preserve natural and/or cultural heritage (A1a, A5a, A1b, A5b), promote the health and welfare of the citizenry (A1c, A5c), and/or strengthen the local economy (A1d, A5d). All such motivations were posited to impel (2) support for an attraction (B), including action(s) by local and nonlocal citizens (B1a, B2a), advocacy organizations (B1b, B2b), destination marketing organizations (DMOs) (B1c, B2c), and government(s) (B1d, B2d). These action(s) in turn were posited to impel (6) the creation (C1), continuous operation (C2), improvement (C3), expansion (C4), and/or resuscitation (C5) of the attraction. Such effects, in turn, were posited to directly affect the surrounding community, as when nonresident volunteers working at an attraction spend money in the local area (13) or the construction projects and/or operating expenditures of the attraction stimulate the local economy (14). Such effects were also posited to indirectly affect the community as a result of impelling visitation to the attraction or changing its volume and/or character (8, 12).

Visitation to the attraction was posited to have positive and negative economic (E1), sociocultural (E2), psychological (E3), and/or environmental (E4) outcome(s) for the community. These outcome(s), in turn, were posited to feedback upon visitation (11), the attraction itself (7), the nature and level of support for the attraction (5), and/or the motivations for such support (1). For example, the enhanced psychological well-being citizens may feel as a result of visiting a park may impel them to visit more frequently (11) and/or to join (5) the park's friends group (B1b), which in turn may raise the funds needed for an upgraded visitor center therein (C3). In general, these phenomena were posited to comprise a system in which motivations (A) for, and manifestations of, support (B) are input; the effect(s) on the attraction (C), visitation to the attraction (D), attraction operations (14), and nonresident volunteer externalities, such as spending in the community (13), are throughput; and the resultant outcome(s) (E) are output that feeds back upon each of the other major components of the system (11, 7, 5, 1).

Citizen support of an attraction may be manifested as political activism (B1a(1), B2a(1)); donations of time, money, land, and/or materials (B1b(2), B2b(2)) (Chernow, 1987; Spierenburg & Wels, 2010; Winks, 1997) and/or some other type of assistance (B1b(3), B2b(3)). In the case of local citizens, such support may be facilitated by friends groups (B1b); in the case of nonlocal citizens, such support may be facilitated by World Heritage Site designation (Jimura, 2011; VanBlarcom & Kayahan, 2011) or the intervention of national or international advocacy groups, such as the Trust for Public Land, The Nature Conservancy, or organizations that sponsor "voluntourism" (Wearing, 2001) (B2b). Government support of an attraction (B1d, B2d) may take the form of agency operation of the facility; agency grants to private organizations for planning, constructing, and/or operating the attraction; or state, provincial, or national park designation (Fredman, Friberg, & Emmelin, 2007).

Local and nonlocal citizens, advocacy organizations, DMOs, and government entities may interact in complex ways in the course of supporting an attraction. For example, in the U.S., local citizens seeking to buy land for a park or preserve an historic building in their town may obtain (3) planning and fund-raising assistance from nonlocal advocacy organizations (B2b) such as the National Trust for Historic Preservation or various foundations (Crompton, 1999). Similarly, at the impulsion of local citizens (B1a), a municipal government (B1d) may buy land for a new park with the financial aid (3) of the Land and Water Conservation Fund, a federal program administered by the National Park Service (B2d(2)), and/or with the financial aid of a state government program (B2d(1)), such as the Michigan Natural Resources Trust Fund.

The existence of an attraction may result in complex, interrelated positive and/or negative economic, sociocultural, psychological, and/or environmental outcomes for the surrounding community. For example, the expenditures of nonresident attraction visitors may restructure the community's economy (E1) to the extent that local citizens' newfound wealth alters their lifestyles (21). Similarly, increased tax revenues from a new attraction may lead to enhanced recreation opportunities (21), which in turn may heighten the psychological well-being of some citizens (19). On the other hand, the pollution and/or congestion resulting from tourist visitation to an attraction (E4) may diminish the quality of life in the community (23). Given Nunkoo and Ramkissoon's (2011) finding that residents' perceptions of the costs of tourism, in addition to their perception of its benefits and their overall level of satisfaction with the community, affect community support for tourism, this diminished quality of life may in turn dampen support for an attraction (5).

Community support of an attraction may be manifested as action(s) by local individual citizen(s) (B1a), local advocacy organization(s) (B1b), a local DMO (B1c), and/or the municipal government (B1d). For the effects of such local action(s) (B1) to be estimated, they must be isolated from nonlocal manifestation(s) of support (B2), including action(s) by nonlocal individual citizen(s) (B2a), nonlocal advocacy organization(s) (B2b), nonlocal DMO(s) (B2c), and state/provincial (B2d(1)), national (B2d(2)), and/or indigenous (B2d(3)) governments. Assuming this can be accomplished, one or more outcomes (E) can be estimated and attributed to such support. In the case of economic outcomes (E1), the positive economic impacts (E1a) would represent the gross impacts of such efforts, the difference between the positive and negative impacts (E1a – E1b) would represent the net impacts of such efforts, and the ratio of net impacts to the value of local citizen (B1a), local advocacy organization (B1b), local DMO (B1c), and/or municipal government (B1d) action(s), as the case may be, would represent the community's return on investment. The value of such local action(s) could be estimated as the monetary equivalent of volunteer time, materials donated to construction projects, temporary

free housing provided to nonresident volunteers, time devoted to supporting and/or operating the attraction, etc.

In addition to these net economic impacts, an attraction may yield economic *benefits* (E1c) in the form of visitors' "consumer surplus," or willingness to pay for visits, less the actual costs they incur in the process (E1d). Such benefits may include the value to society of the environmental and cultural education and physical and mental well-being resulting from attraction visits (E1c), less the opportunity, visitor congestion, and other costs incurred by the facility (E1d) (Loomis & Walsh, 1997).

As explained below, the gross economic impacts (E1a) of the combined local effects of individual citizen (B1a), advocacy organization (B1b), DMO (B1c), and municipal government (B1d) actions that resuscitated (C5) an attraction were estimated in this study. This was the only outcome of the attraction that was empirically documented. The roles of citizen altruism (A1), personal interest(s) (A2), civic pride (A3), business profits (A4), and government mandate (A5) in motivating local support of the attraction (B1) were inferred from the historical record, summarized in the next section. The ensuing local support attracted nonlocal support (B2), leading to the resuscitation (C5), improvement (C3), and continuous operation (C2) of the attraction, which in turn impelled visitation to the attraction (D) and spending in the community by tourists (12), nonresident volunteers (13), and operators of the facility (14). This spending ultimately led to positive impacts on the community's economy (E1a).

3. Background of the case

The focus of this study was the D.C. Booth Historic National Fish Hatchery in Spearfish, South Dakota, USA, a town in the northern Black Hills that contains about 10,000 residents. In 1896, the U.S. government established this facility, then known as the Spearfish National Fish Hatchery, to propagate, stock, and establish trout populations in the Hills that would create recreational fishing opportunities. The Hatchery later became the headquarters for federal fisheries operations across much of the western U.S. and a popular tourist attraction. In 1978, it was placed on the National Register of Historic Places. In 1983, the U.S. Fish and Wildlife Service (USFWS), after decades of successfully operating the facility, closed it due to budget shortfalls.

Fearing that the federal government's plans to sell the property made it vulnerable to the wrecking ball, the former Hatchery director made it his personal mission to preserve the facility (A2) (Ross, 1996). Convinced that the Hatchery was indispensable to the identity, cultural heritage, tourist appeal, and economic vitality of Spearfish (A1, A3, A4), and understanding that its location in a flood plain made most other uses of the site impractical, he and the mayor urged City officials to take action to save the facility (B1a(1)) (Ross, 1996). In response, the City persuaded the USFWS to retain ownership of the property, requested and received permission to operate the Hatchery under an agreement with the USFWS (3, 4), and hired the former Hatchery director to manage the facility. In 1984, it renamed the Hatchery the "D.C. Booth Historic National Fish Hatchery" after its first superintendent, appointed a citizen board (B1d) to preserve, enhance, and promote the facility's historic, cultural, and educational resources, and reopened it (C5). In 1988, Spearfish citizens passed a referendum (B1a(1)) establishing a 1% tax on local sales in lodging facilities, restaurants, and bars, some proceeds of which were used to provide visitor services at the facility and market it through the local DMO (B1c) (*The History of the Booth Society*, 2010).

In 1989, the City transferred management (B1d) of the Hatchery to the Booth Society, Inc., a non-profit friends group that organized fund-raising and volunteer support of the facility (B1b). Impressed

with local support of the Hatchery, in 1989 the U.S. Congress directed (B2d(2)) the USFWS to resume operation of the facility with a new mission to "assemble, preserve, protect, make accessible to researchers, and interpret the history and technology of fish culture" and funded \$4 million worth of physical improvements to the facility (C3a) (Ross, 1996; U.S. Fish and Wildlife Service, 2011a).

From 1989 to the present the Society and the USFWS have jointly managed the facility under terms of a cooperative agreement (3, 4). The Hatchery continues to rear trout for the Black Hills and attracts over 100,000 visits annually, about 73% of whom are nonresidents (D2) whose expenditures in Spearfish stimulate the local economy (E1a). It features a museum housing the largest collection of fishery history and artifacts in the U.S., a unique volunteer-built (B1a(2)) replica of an historic railroad car used to transport fish, an underwater fish viewing area where visitors can observe huge specimens of trout, interpretive and educational programs, ponds with fish and duck feeding opportunities, hiking trails, a flower garden popular for weddings, and various sculptures (U.S. Fish and Wildlife Service, 2011b). The Hatchery is promoted by Visit Spearfish, the local DMO (B1c), as one of the few free family attractions in the Black Hills.

The Society helps organize special events, pays utility costs for some facilities, provides educational outreach to local schools, and manages a gift shop, concession, and visitor center, the profits from which are reinvested in site improvements (B1b(2)). It also manages a large and diverse volunteer program, with over 14,000 h donated annually to the operation of the facility (B1a(2), B2a(2)). In exchange for 15–24 h of labor per week, the City provides volunteers who are nonresidents with a fully equipped campsite within a specially designated "Volunteer Village" section of the municipally-operated Spearfish City Campground adjacent to the Hatchery (B1d). The City also allows an entrance kiosk and visitor parking on adjacent city park property and maintains this lot (B1d) (U.S. Fish and Wildlife Service, 2011c). During the period in which Spearfish citizens resuscitated and supported the renewed operation of the Hatchery, no assistance was solicited, offered, or obtained from nonlocal organizations or citizens (other than the nonresident volunteers mentioned above).

4. Nature and scope of the study

Scientists often gain insights from observing especially interesting, unusual, or revealing phenomena. For example, Davis (1994) detected the effects of solar neutrinos by conducting an experiment deep within a gold mine, where almost all solar radiation except neutrinos was blocked. Thus,

[W]hen the objective is to achieve the greatest possible amount of information on a given problem or phenomenon, a representative case or a random sample may not be the most appropriate strategy. This is because the typical or average case is often not the richest in information. Atypical or extreme cases often reveal more information because they activate more actors and more basic mechanisms in the situation studied (Flyvbjerg, 2006, p. 229).

As Davis (1994) found opportunity to isolate the effects of solar neutrinos by conducting an experiment within the atypical setting of a gold mine, the authors found opportunity to isolate the economic value of community support of a tourist attraction by studying the atypical case of the Booth Fish Hatchery, an attraction resuscitated solely by the actions of Spearfish citizens. The valuation was accomplished by estimating, at the request of the Booth Society, the impacts of the Hatchery on the economy of Spearfish in 2007 and inferring that because the facility would not exist today but for the institutional, financial, and volunteer support it received

from the Spearfish community, such economic impacts quantify the revenues and employment the community would have annually lost had it not resurrected the Hatchery. Alternatively stated, such impacts measure the value in 2007 of the Spearfish community's support of the attraction at the time of its resuscitation in 1984. Such quantification of the present (or near-present) value of past actions is analogous to appraising the current value of a house to determine the financial benefits realized from purchasing it many years earlier.

It was not possible to measure possible negative economic impacts of the attraction, such as the cost of extra police, fire, medical, road maintenance, and sanitation services likely necessitated by the Hatchery, nor to directly measure community support of it by estimating the monetary value of City government staff time dedicated to initially operating the attraction, donated volunteer time, free use of "Volunteer Village" campsites by nonresident Hatchery volunteers, etc. Therefore, the gross impacts, but not the net impacts or return on investment accruing to the community as a result of saving the Hatchery, were estimated. Gross impacts of the combined effect of all forms of community support, both individual (B1a) and organizational (B1b, B1c, B1d), were inferred indirectly on the logical grounds articulated in the preceding paragraph. Such indirect inference is commonplace in science: physicists infer the existence of quarks from the characteristics of other particles produced in high energy nuclear collisions; astronomers infer the gravitational pull, and hence existence, of planets from anomalies in a star's motion; psychologists infer embarrassment from blushing; and economists infer demand for an attraction from variations in the number of visits originating from successive distance bands surrounding the attraction (Loomis & Walsh, 1997).

Notwithstanding Manning's (1999, p. 180) observation that the "local community" likely consists of many different communities, each with its own values and priorities," and Weaver's (2006, p. 148) contention that the incorporation of a community-based approach into sustainable tourism planning is impeded by "...widespread apathy and lack of technical knowledge, the disproportionate influence of interest groups, the unequal distribution of costs and benefits and the difficulty of obtaining consensus," the Spearfish community coalesced and rescued the Hatchery from the brink. Its initial commitment to save the facility impelled a "virtuous cycle" in which local residents subsequently committed to funding the Hatchery with a new tax (B1a), the federal government committed to site improvements and joint operation with the Booth Society (B2d(2)), the Society organized fund-raising and volunteer programs (B1b), the local DMO (B1c) recommenced promotion of the facility, and the ensuing positive economic impacts of tourist visitation to the facility (E1a) encouraged continuing community support (5).

Although the federal government's funding of site improvements in 1989 and subsequent co-management of the facility with the Booth Society (B2d(2)) was a nonlocal source of support, such support would not have occurred had the community not saved the attraction and then demonstrated to the federal government its commitment to the facility. Likewise, nonresident volunteers managed by the Booth Society, although a nonlocal source of support, would not have occurred had the community not saved the attraction and then attracted such volunteers, in part through the enticement of free full-service campsites in return for contributed labor.

Many of the same methods used in other economic impact studies, examples of which were cited above, were employed in this study. However, it differed fundamentally from all such inquiries because of the unique circumstances surrounding the case. The Booth Hatchery would not exist today but for its resuscitation by the surrounding community. This cannot be said of the other attractions studied, which owed their origin and continuance to

complex mixtures of local (B1) and nonlocal (B2) support. For example, in the many studies of the economic impact of U.S. National Park System units (e.g., Israel, 2004; Stynes, Propst, & Sun, 2001; Stynes & Sun, 2003; Stynes, Sun, & Propst, 2002), various parks were aided by local friends groups and promoted by local DMOs, but all owed their origin and continuance to U.S. federal government outlays and, in some cases, to major gifts of land from nonresident philanthropists (B2a(2)) (Chernow, 1987; Winks, 1997). Under such circumstances, it clearly was, and is, extremely difficult, if not impossible, to isolate the economic outcomes specifically attributable to community support of these attractions.

5. Methods

The economic impact of tourist attractions result from injections of money into an economy by nonresident visitors and nonresident volunteers; expenditures by residents do not contribute to attractions' economic impact because they merely recycle money that already existed there (Crompton, 2006). Consequently, this study explicitly isolated, measured, and included in economic impact estimates the expenditures of nonresidents only.

These nonresidents were of three types: (1) visitors from out-of-town who got married or attended weddings held at the Hatchery in 2007, (2) volunteers from out-of-town who worked at the Hatchery in 2007, and (3) other out-of-town visitors during 2007, hereinafter termed, "nonresident general visitors". To estimate the expenditures of these nonresidents, separate surveys of each type of nonresident were conducted using the methods described below. These expenditures, plus spending in Spearfish related to Hatchery operations and construction, constituted the direct effects of the Hatchery on Spearfish's economy. Thus, computing the economic impact of the Hatchery involved estimating and aggregating the above four types of expenditures and determining the associated secondary effects.²

Estimates of spending by nonresidents who wedded or attended weddings at the Hatchery were obtained by surveying by mail couples who wedded there. Estimates of spending by nonresident volunteers were obtained by surveying them by mail. Estimates of nonresident general visitor expenditures in Spearfish were obtained by isolating the number of visits to the Hatchery by nonresident general visitors during the facility's peak season (late May through September) in 2007 and multiplying this value by estimated average nonresident general visitor spending in Spearfish per person per trip. These averages were obtained from an intercept survey of such visitors. The Hatchery's operating and construction-related expenditures in Spearfish during 2007 were obtained from the USFWS and the Booth Society.

5.1. Wedding and volunteer survey procedures

All weddings at the Hatchery in 2007 occurred during the peak season. A questionnaire that solicited information about nonresident expenditures associated with weddings held at the Hatchery, including spending by nonresident couples and nonresident wedding guests, was mailed on 21 November, 2007 to all 19 of the couples that wedded there in 2007; 17 (89.5%) responded.

Twenty-seven nonresident volunteers served at the Hatchery in 2007. These persons, plus a live-in relative of a volunteer couple, resided in "Volunteer Village" during their period of service. A

² For the benefit of non-economists, clear, non-technical definitions of the terms, "multipliers," and "direct," "secondary," "indirect," "induced," and "total" impacts, used herein, may be found on the U.S. Army Corps of Engineers' Natural Resources Web site (<http://corpslakes.usace.army.mil/employees/economic/glossary.cfm>).

questionnaire that measured these volunteers' household size, length of stay, and household expenditures in Spearfish during 2007 was mailed on 2 September, 2008 to each of the 15 households containing nonresidents who volunteered at the Hatchery that year; 11 (73.3%) responded.

5.2. Attendance estimation procedures

Monthly estimates of Hatchery attendance were derived from an optical counting device that cast a beam of light across a section of the Hatchery that nearly all visitors had to cross to enter the facility. To estimate the percentage of visits by nonresidents versus residents of Spearfish, volunteers contacted visitors at various times of the day and evening on 22 randomly selected days throughout the season and asked if they resided in Spearfish. Since the intercept survey was intended for nonresident general visitors only, and surveyors therefore had to determine if prospective respondents were nonresidents before soliciting their cooperation, surveyors also tallied visitor origins in the course of distributing questionnaires over 46 randomly selected days. Both methods were employed on two days. The results, based on 4108 visitor party contacts over 66 days, revealed that an estimated 27.4% of visits were by residents and 72.6% of visits were by nonresidents.

5.3. Nonresident general visitor survey procedures

Questionnaires were distributed to nonresident general visitors in packets that contained a postage-paid, self-addressed, return envelope, a self-administered questionnaire, a cover letter, a free souvenir pencil, and a complimentary postcard depicting the Hatchery. Among other questions, the questionnaire solicited visitors' postal code, party size, length of stay in Spearfish, and expenditures in Spearfish over the course of their entire trip, for each of 11 spending categories (e.g., "camping fees and charges," "restaurant meals and drinks"). The cover letter explained the importance of the study and provided a form on which respondents could register to win a \$500 cash giveaway.

Surveyors asked visitor parties if they were nonresidents, and if so, requested them to complete and return a questionnaire after leaving Spearfish. Only one questionnaire packet was distributed per party contacted. A complimentary container of fish food was given to visitors who agreed to participate. Only 1.7% of parties who had not received a questionnaire packet on a prior visit refused to participate.

Data collection commenced on 26 May, 2007, shortly after the Hatchery opened for the season, and ended on 27 September, 2007. Given the generally harsh weather during the Hatchery's October to mid-May off-season, and the closure of Spearfish City Campground and several local motels during this period, off-season nonresident visitation was considered negligible and ignored.

Questionnaire packets were distributed in monthly batches in numbers proportionate to estimated monthly 2006 visitation. Questionnaire packet distribution occurred at places frequented by all Hatchery visitors during randomly selected blocks of time on 46 randomly selected days over the course of the season.

One thousand six hundred eighty-nine questionnaire packets were distributed. Nine hundred eighty-five valid, completed questionnaires were received, yielding a response rate of 58.3%.

5.4. Analytical procedures

5.4.1. Estimation of spending by nonresident wedding couples and attendees

The wedding questionnaire measured three types of wedding-related expenditures: (1) spending in Spearfish on pre-wedding

trips involving nonresident couples and/or family member(s) or friend(s), (2) spending in Spearfish by nonresident wedding couples on the trips associated with their weddings, and (3) spending in Spearfish by nonresident wedding invitees who took overnight trips to the wedding. The first two types of spending were measured using the same spending questions used in the intercept survey questionnaire; responses were summed to derive aggregate spending estimates.

The third type of spending was imputed. Since respondents could not be expected to estimate spending by their invitees, and since invitees who patronized different types of lodging facilities (e.g., motels, campgrounds, friends' or relatives' homes) were considered likely to have different patterns of spending in Spearfish, invitees' expenditures were imputed from data generated by questions on the number of nights invitee travel parties spent in Spearfish in various types of lodging. After converting the units from party-nights to party-days by adding 1 to responses, nonresident invitees were found to have collectively spent 105 days in hotels, motels, and Bed & Breakfasts; 45 days in friends' or relatives' homes; and 13 days in Spearfish City Campground. These values were multiplied by mean per party per day expenditures of patrons of these lodging types across the 11 spending categories, computed from data gathered in the intercept survey, to estimate aggregate invitee expenditures by spending category and in general. Expenditures by four nonresident invitee parties who took day trips to attend weddings were considered too problematic to measure and were ignored.

5.4.2. Estimation of spending by nonresident volunteers

Estimates of household spending in Spearfish by nonresident volunteers during their stays in Spearfish were converted to estimated expenditures per person per stay by dividing respondents' responses by household size. The resulting estimates of spending per person per stay were then multiplied by 28, the number of persons who resided in volunteer households in 2007, to derive aggregate nonresident volunteer spending in Spearfish in 2007.

5.4.3. Estimation of spending by nonresident general visitors

Three types of nonresident general visitors were conceptualized:

- Type 1 visitors: those who would not have visited Spearfish but for the existence of the Hatchery,
- Type 2 visitors: those who visited Spearfish for reasons other than the Hatchery, and whose visit would have occurred without the existence of the Hatchery, but because of their visit to the facility spent more money in town than they otherwise would have, and
- Type 3 visitors: those who visited Spearfish for reasons other than the Hatchery, whose visit would have occurred without the existence of the Hatchery, and did *not* spend more money in Spearfish than they otherwise would have as a result of their visit to the Hatchery.

Type 1 visitors were identified by a negative response to the intercept survey question, "Would you have visited Spearfish on this trip if the Booth Fish Hatchery did not exist?" Type 2 visitors were identified by affirmative responses to the questions, "Would you have visited Spearfish on this trip if the Booth Fish Hatchery did not exist?" and "As a result of your visit to the Booth Fish Hatchery, did you spend more money in Spearfish than you otherwise would have?" Type 3 visitors were identified by an affirmative response to the question, "Would you have visited Spearfish on this trip if the Booth Fish Hatchery did not exist?" and a negative response to "As a result of your visit to the Booth Fish Hatchery, did you spend more

money in Spearfish than you otherwise would have?" About 21.5% of intercept survey respondents were Type 1, 20.4% were Type 2, and 58.1% were Type 3.

In accordance with well-established principles of economic impact analysis (e.g., Crompton, 1995, 2006; Johnson & Moore, 1993), the visits and expenditures of Type 3 visitors were excluded from the analysis. In addition, only the extra spending in Spearfish that occurred as a result of Type 2 visitors' Hatchery visits were included in estimates of Type 2 visitors' direct spending in town. To accomplish this, responses to the question, "About how much more money do you think you spent in Spearfish as a result of visiting the Booth Fish Hatchery," asked of respondents who affirmed that they spent more money in town as a result of visiting the Hatchery than they otherwise would have, were used to compute the percentage of Type 2 respondents' total spending in Spearfish represented by this "extra" spending. This percentage was then multiplied by Type 2 respondents' reported expenditures in each of the 11 spending categories to downwardly adjust their spending in Spearfish such that it reflected only that portion attributable to Hatchery visits.

To account for possible monthly variations in visitors' spending patterns, aggregate visitor expenditures were estimated for each month of the season and then summed to derive an estimate for the season as a whole. Initially, estimates of the number of resident visitors, derived from the tallying procedures described above, and Type 3 visitors, derived from analyses of intercept survey data, by month, were deducted from monthly total visitor counts to obtain adjusted attendance estimates for each month. These estimates were then multiplied by Type 1 and downwardly adjusted Type 2 visitors' mean spending per person per trip in each spending category, computed from intercept survey data, to estimate aggregate nonresident general visitor expenditures in Spearfish by spending category and month. These monthly estimates were then summed to obtain an estimate for the entire season. This value was, in turn, added to estimates of spending by nonresident volunteers, spending related to Hatchery weddings, and Hatchery operating and construction expenditures in Spearfish in 2007 to derive total direct expenditures in Spearfish by spending category.

5.4.4. Estimation of secondary economic impacts

Estimated direct expenditures in Spearfish were multiplied by multipliers specific to that portion of Spearfish exclusive of Black Hills State University to estimate the secondary economic impacts of the Hatchery. The multipliers were computed from a postal code-level data file for 2006 purchased from MIG, Inc. (2012).

IMPLAN is used to create complete, extremely detailed Social Accounting Matrices (SAMs) and multiplier models of local economies. A SAM describes the structure and function of the economy in a specified area by capturing the actual dollar amounts of all business transactions occurring in the regional economy as reported each year by businesses and government agencies. SAMs are derived from unique local and U.S. Census Bureau information as opposed to estimates from national averages. They are a better measure of economic flow than traditional input–output accounts because they include "non-market" transactions, such as taxes and unemployment benefits.

Multiplier models built from region-specific SAMs reflect the region's unique economic structure and trade situation and provide a framework for estimating the direct, indirect, and induced changes within the economy of a modeled event, after accounting for leakages resulting from purchases outside the region's borders. Multiplier models estimate the impacts of a user-specified change in the chosen economy on 440 unique economic sectors in the United States, yielding a detailed summary of impacts on business receipts, jobs, household incomes, and tax revenues (MIG, Inc., 2012).

The IMPLAN parameters estimated in this study were automatically adjusted to account for price inflation between 2006 and 2007, the year to which estimates of direct expenditures pertained. IMPLAN SAM Type III multipliers, equal to the sum of direct, indirect, and induced impacts divided by direct impacts, were used. An IMPLAN, as opposed to a Computable General Equilibrium, analysis, was conducted since the objective was to analyze the local (vs. state or national) impacts of tourism for a local client (Dwyer, Forsyth, & Spurr, 2004).

6. Results

6.1. Direct economic impacts of the hatchery

Nonresident wedding-related visitors, nonresident volunteers, and nonresident general visitors collectively spent an estimated \$844,141 in Spearfish during the season. Eighty-five percent (\$716,096) of this total derived from spending by nonresident general visitors, 9.7% (\$81,887) derived from spending by nonresident wedding-related visitors, and 5.5% (\$46,158) derived from spending by nonresident volunteers.

During 2007, 5.5 full-time equivalent Hatchery employees worked for the USFWS and 2.0 full-time equivalent employees worked for the Booth Society. All such employees resided in Spearfish. Expenditures in Spearfish in 2007 for the USFWS and the Booth Society combined were \$508,860 for wages and salaries, \$142,451 for operating expenses, and \$101,649 for construction and major repairs, or \$752,960 altogether. The latter figure was added to the expenditures of nonresident visitors and nonresident volunteers (\$844,141) reported above to derive total direct Hatchery-related expenditures in Spearfish of about \$1,597,101. These direct expenditures re-circulated in Spearfish's economy and caused the secondary impacts described below.

6.2. Secondary economic impacts of the hatchery

The direct business revenues impact on Spearfish of \$1,597,101 reported above impelled an indirect business revenues impact of \$236,810 and an induced impact of \$307,848 (Table 1). Thus, the Hatchery augmented business revenues in Spearfish by the sum of these three values, or about \$2,141,759. This indicates that each dollar spent as a result of the Hatchery created an additional \$2,141,759/\$1,597,101 or \$1.34 in business revenues in Spearfish. Of the total business revenues impact, 24.9% was captured by the retail sector, 24.1% by the accommodations and food services sector, 16.0% by the government and other institutions sector, 5.9% by the health and social services sector, 5.7% by the construction sector, and 23.4% by other sectors.

Hatchery-related spending created about 27.34 jobs in Spearfish (Table 1). Direct spending generated about 20.96 jobs; indirect and induced spending generated about 6.38 additional jobs. Thus, each job directly created by Hatchery-related spending created about 27.34/20.96 or 1.30 additional jobs. Most of the employment impact was in the accommodations/food services and retail trade sectors, which accounted for 38.7% and 33.5%, respectively, of the total employment impact. Lower employment impacts occurred in the construction (5.2%), health and social services (5.1%), administrative and waste services (3.2%), and other sectors (14.4%).

Spearfish workers took home \$464,985 because of direct spending related to the Hatchery (Table 1). The indirect personal income impact totaled about \$71,048 and the induced impact was about \$93,050. Overall, the Hatchery generated about \$629,083 in personal income and each dollar of Hatchery-related personal income generated an additional \$629,083/\$464,985 or \$1.35 in personal income in Spearfish.

Table 1
Estimated impacts of the D.C. Booth Historic National Fish Hatchery on the economy of Spearfish, South Dakota, 2007.

Impact of Hatchery on...	Direct impact	Indirect impact	Induced impact	Total impact	Multiplier
Business revenues					
Nonresident visitor and volunteer spending	\$844,141	\$149,013	\$198,938	\$1,192,092	1.41
Operating expenditures	\$752,960	\$87,797	\$108,910	\$949,667	1.26
Total	\$1,597,101	\$236,810	\$307,848	\$2,141,759	1.34
Employment					
Nonresident visitor and volunteer spending	14.46	1.77	2.32	18.55	1.28
Operating expenditures	6.50	1.09	1.20	8.79	1.35
Total	20.96	2.86	3.52	27.34	1.30
Personal income					
Nonresident visitor and volunteer spending	\$298,699	\$42,331	\$59,234	\$400,264	1.34
Operating expenditures	\$166,286	\$28,717	\$33,816	\$228,819	1.38
Total	\$464,985	\$71,048	\$93,050	\$629,083	1.35

State sales tax on Hatchery-related spending in Spearfish and local option sales tax and non-tax fees levied by local government, exclusive of lodging-related taxes, generated about \$125,809. Taxes on Hatchery-related spending at lodging and campground facilities in the City at a rate of 4% for South Dakota sales tax, 2% for Spearfish sales tax, 1% for Spearfish Hospitality Tax, and 1% for South Dakota Tourism Tax, generated an additional \$12,590 in tax revenues.

According to [Smith Travel Research \(2008\)](#), the average daily hotel/motel guestroom rate for western South Dakota (which includes Spearfish), was \$74.21 in 2007. Since total aggregate visitor spending on commercial lodging was \$111,056, the latter, divided by \$74.21, yielded an estimate of 1497 occupied room-nights attributable to the Hatchery. This value, multiplied by a \$2 Business Improvement District occupancy fee per occupied room-night in Spearfish hotels and motels, yielded an estimate of \$2994 in occupancy fees attributable to the Hatchery. Thus, the overall revenue gain for state and local governments due to the Hatchery was \$125,809 + \$12,590 + \$2994, or about \$141,393.

7. Conclusions and suggestions for further research

Significant positive economic outcomes currently accrue to the Spearfish community due to its resurrection of the Hatchery, specifically about \$1.6 million in direct attraction-related expenditures in the town, \$2.1 million in business revenues, \$629,000 in personal income, \$141,000 in local and state taxes and fees, and 27 new jobs. These findings serve to justify Spearfish residents' decision to save the attraction and to encourage their continued support of it, and may have similar effects on similar communities faced with similar circumstances. In addition, the case serves to document the possibility of a community's initial support of an attraction spawning a "virtuous cycle" of further support from both within and without the community. Finally, both the cataclysmic closure of the town's keystone attraction and the "virtuous cycle" ensuing from the local citizenry's bold intervention suggest the utility of "adaptive management" of tourism resources, whereby stakeholders co-manage on the basis of long understanding and reciprocal social learning to allow for rapid operational adjustment to change, the seizing of arising opportunities, and the enhancement of resilience ([Farrell & Twining-Ward, 2005](#)).

Given the large number of model components portrayed as "outside the scope of this study" in [Fig. 1](#), ample opportunity exists for further research in this area. In particular, follow-up studies in other settings are obviously necessary to more thoroughly understand this subject. To avoid the confounding effects of nonlocal sources of support, such research should seek to identify situations in which a community, solely through its own efforts, has created or resuscitated an attraction. Hopefully these inquiries will have the

means and opportunity to study this phenomenon more completely than was possible in this investigation so that not only the gross, but also the net, economic impacts, as well as return on investment ensuing from community support of an attraction, can be estimated. As intimated above, estimating net impacts will require measuring the negative, as well as positive, economic impacts of the attraction; estimating return on investment will require dividing net impacts by an estimate of the value of community donations of time, money, materials, land, imputed rent, etc.

Thoroughly understanding the economic outcomes of community support of attractions will require estimating the net economic *benefits*, as well as *impacts*, associated therewith. In this case, the magnitude of such benefits might have been enhanced by the Hatchery's free admission, the absence or near-absence of opportunity costs due to its location in a flood plain, the benefits to society of the facility's environmental education and interpretation programs, and the recreational value of sport fishing made possible by stocking Black Hills waters with Hatchery-raised fish.

Finally, the non-economic aspects of this phenomenon are also worthy of investigation. Such inquiries could assess, for example, what a community's support of an attraction does to, and for, the attraction and the community by determining the extent to which such support enhances personal and community esteem, identity, environmental awareness and preservation, and quality of life (E2a, E3a, E4a). Improvements in the latter could have secondary effects by attracting new residents to a community and increasing retention of existing residents. Possible negative outcomes, such as tourist displacement of local residents at the attraction (e.g., [Mak & Moncur, 1998](#)) and additional crime, traffic, and pollution (E2b, E3b, E4b) should also be studied so that net social and personal impacts can be identified.

Clearly, much remains to be discovered about the significance and consequences of community support of attractions. Given the vital roles of attractions and communities in tourism, it is hoped that the findings reported here will in some measure stimulate and facilitate this work.





Appendix A. Supplementary material

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.tourman.2012.04.003.

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