An Investigation of a Major Rock-Crawling Event in Rural Oklahoma: Tourism Market, Tourists’ Expenditures, and Management Implications

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Abstract

An online survey was used to investigate a thriving outdoor activity in North America, rock-crawling. Using the participants of a major event called the “Big Meat Run,” the study examined different levels of rock-crawling specialization and their distinct behaviors and setting preferences. A total of 532 event participants completed the survey and provided valuable information regarding tourism market, tourists’ expenditures, and management implications. The results showed that the majority of event participants were serious and skilled rock-crawlers, who contributed to the local economy through substantial expenditure on vehicle gas and oils, lodging, food, and beverages. They tended to visit the area more often, stayed longer, and demonstrated genuine concern about program management as compared to casual rock-crawlers or event spectators. Improved supporting infrastructures such as designated parking and larger campsites, and management strategies such as zoning and regulations were recommended.
**Introduction**

Rock-crawling is a thriving outdoor activity in North America. It is one special form of off-road vehicle (ORV) activity for which drivers use highly modified vehicles to climb over extreme terrain or rock obstacles. Unlike other motorized recreation activities that are typically in pursuit of speed, these rock-crawling vehicles are driven slowly and equipped with large knobby tires and highly flexible suspension system to maneuver over various terrain. Because of the nature of the activity, a roll cage is installed to provide safety in the event of rollovers.

The “Big Meat Run” is an annual rock-crawling event, typically held on the last weekend of March, in Disney, Oklahoma. It is estimated by the local police department that more than 10,000 visitors attended the three-day event (Klein, 2017), making the “Big Meat Run” one of the largest events in Oklahoma. Located at the south side of Disney, the area below the Pensacola Dam, managed by the Grand River Dam Authority (GRDA), and an extensive off-road trail system on the neighboring private lands have become the off-road playground for rock-crawlers and ORV enthusiasts to enjoy their leisure time. Each year, thousands of visitors travel to this 300-resident, 900-acre rural town and bring in significant economic benefits. These off-roaders access the area from adjacent campgrounds, state parks, or roadways without restrictions or paying an entrance fee, causing concerns regarding visitor safety and event management.

As rock-crawling activity and the “Big Meat Run” become increasingly popular, GRDA property managers seek long-term direction and guidance for management of the off-road activities, including an extensive understanding of rock-crawlers and event participants, the economic benefits, infrastructure needs, and management strategies. This study answered the call...
from GRDA, investigated 2016 “Big Meat Run” attendees, and provided findings and suggestions regarding the tourism market, tourist expenditures, and management implications.

To answer property manager’s inquiries, the study applied recreation specialization framework as the core theory. Recreation specialization describes the heterogeneity and dynamics within a social group from inexperienced to skilled (Bryan, 1977). For outdoor recreationalists who participate in the same activity, those who are more committed and with advanced skills usually have different needs and attitudes toward management strategies, compared to those who only participate occasionally and are less experienced (Manning, 2011; Scott, Ditton, Stoll, & Eubanks, 2005). Recreation specialization has been applied to study various outdoor pursuits including anglers (Oh & Ditton, 2009), birders (Scott, et al., 2005), boaters (Kuentzel & Heberlein, 2006), hikers (Virden & Schreyer, 1988), and mountaineers (Dyck, Schneider, Thompson, & Virden, 2003). Subgroups for each of these activities and their distinct setting and managerial preferences were successfully identified. The findings from these aforementioned studies led to effective management actions and strategies. With the application of recreation specialization, the purpose of this study were three-fold: (1) understand the tourism market of rock-crawling event in Oklahoma, (2) investigate rock-crawlers’ recreation specialization and its relationship with travel patterns and expenditures, and (3) identify current challenges and provide management strategies.

Methodology

An on-line survey was developed based on literature review and GRDA property management needs. The survey instrument included questions of recreational specialization, various visitor behaviors, and an open-ended question for additional comments.
Recreation specialization was traditionally measured using a multidimensional index, including behavioral, skill/knowledge cognitive, and psychological attachment (Lee & Scott, 2004; Scott & Shafer, 2001). Recently, a single-item, self-classification measure with statements describing the multidimensional nature of specialization has been proven effective (Scott, et al., 2005; Sorice, Oh, & Ditton, 2009). Following the theoretical construct and the consultation with experienced rock-crawlers, this study adopted the single-item measurement and developed four statements each representing committed rock-crawlers, frequent rock-crawlers, casual rock-crawlers, and spectators. Each statement described different levels of rock-crawling involvements in terms of the importance of activity, equipment purchase, frequency of participation, and skill level.

Visitor behavior questions included residential origins, frequency of participation, amenity improvements, and expenditures over the “Big Meat Run” weekend. Specifically, the expenditure questions asked survey respondents to report their money spent on items such as lodging, food and beverage, gas and oil, and other expenses. The survey also included overnight stay and lodging choice and an open-ended question asking for additional comments or suggestions regarding the planning and management of the event.

Using the convenient sampling method, visitors to the GRDA property were invited to respond to the survey and provide feedback. The on-line survey became available for public input from March 18, 2016, the weekend of “Big Meat Run” until the end of July, 2016. Posters and business cards with QR codes and URLs that lead to the on-line survey were distributed at the registration point and selected campgrounds, cabins, and other lodging choices in Disney and Langley, OK. Additionally, recruiting statements with the link to the survey were posted on
rock-crawling related social media pages and websites, including rock-crawling group Facebook pages, “Big Meat Run” event page, and the South Grand River Chamber of Commerce website.

Descriptive analysis was used to present results for tourism markets, visitor expenditures and levels of recreation specialization. Due to the non-normally distributed data, Kruskal-Wallis H test, the non-parametric alternative to the one-way ANOVA, was conducted to examine event attendee’s recreation specialization and travel/event expenditures. The Chi-square tests were utilized to investigate if survey participants’ rock-crawling participation and their overnight stays during the “Big Meat Run” weekend varied with their level of specialization. The significance level was at the 0.05 level (p-value) for statistical significance. Furthermore, the qualitative content analysis was applied to investigate the open-ended question regarding additional suggestions and comments on the event and property management.

**Results**

A total of 532 respondents completed the online survey. The results provided information for the “Big Meat Run” tourism market, tourist expenditures, and the management implications.

**Tourist Market**

The event attracted visitors from Oklahoma and surrounding states, as well as tourists from states of Colorado, Illinois, Iowa, Minnesota, South Carolina, South Dakota, and Utah. The majority of the visitors were from northeastern Oklahoma and several surrounding metropolitan areas such as Wichita, Kansas City, St. Louis, Fayetteville, Tulsa, and Oklahoma City.

Almost 80% of the survey respondents were committed and frequent rock-crawlers. The committed rock-crawlers (38.9%) were serious and skilled and considered rock-crawling to be their primary outdoor activity. They read rock-crawling articles, purchased equipment to enhance their experience, enjoyed being out on the rock frequently, and participated as a member of a
team. Another 39.2% were frequent rock-crawlers; for these respondents, rock-crawling was an important but not exclusive outdoor activity, their participation was inconsistent. These frequent rock-crawlers were moderately skilled and occasionally read rock-crawling articles or purchased additional equipment. Approximately 11.7% categorized themselves as casual rock-crawlers. To these participants, rock-crawling was an enjoyable but infrequent activity that was incidental to other travel and outdoor interests. These casual rock-crawlers were not highly skilled in rock-crawling, seldom read related articles, and did not own much rock-crawling equipment beyond the basic necessities. About 10.2% were spectators. These spectators enjoyed watching rock-crawling but had little to no interest in increasing their involvement beyond watching, photography, supporting a family member or a friend.

Those committed and skilled rock-crawlers tended to participate in rock-crawling events more often, compared to the spectators and less experienced rock-crawlers. While 29.1% participated in rock-crawling events monthly or more frequently, 47.2% attended two or three events per year. About 16% reported that they attended one rock-crawling event each year and 7.7% were first-time attendees. The chi-square test results showed a statistically significant difference between levels of recreation specialization and frequency of participation, $\chi^2(9) = 45.035, p < .001$. Committed rock-crawlers reported a higher frequency in participating in rock-crawling events, while casual rock-crawlers and spectators had lower event attendance.

Tourist Expenditures

A substantial economic benefit brought by visitors to the “Big Meat Run” was noted in the South Grand Lake area, including towns of Disney, Langley, and Tia Juana, particularly on gas and oil for vehicles as well as food and beverage. Among 532 survey respondents, 327 reported their expenditures during the “Big Meat Run” weekend. Among these respondents,
approximately $120,000 was spent in the South Grand Lake area and $26,000 outside of a five-mile radius. Most expenditures in the South Grand Lake area went to gas and oil for motor vehicles (19.5%); restaurants, bars, and food trucks (19.3%); and groceries, drinks, take-out food/drinks not from restaurants (18.5%). Outside of this area, expenses occurred on gas and oil for motor vehicles (20.8%); other vehicle expenses (e.g., repairs, parking, storage, slips, etc.; 20.6%); and groceries and drinks outside of restaurant (19.1%). For average spending per day, visitors spent the most ($104) for lodges, cabins, hotels, motels, or B&B rental homes in the South Grand Lake area and $119 outside of the area. See Table 1 for detail expenditures.

<table>
<thead>
<tr>
<th>Items</th>
<th>South Grand Lake</th>
<th>5 miles outside of South Grand Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas and oil for auto, boat, RV, ORV/ATV, etc.</td>
<td>$23,527</td>
<td>$5,427</td>
</tr>
<tr>
<td>Restaurants, bars, food trucks</td>
<td>$23,285</td>
<td>$2,165</td>
</tr>
<tr>
<td>Groceries, drinks, take-out food/drinks not from restaurants</td>
<td>$22,220</td>
<td>$4,990</td>
</tr>
<tr>
<td>Campground fees (including hook-ups)</td>
<td>$15,227</td>
<td>$1,265</td>
</tr>
<tr>
<td>Lodge, cabins, hotels, motels, B&amp;B rental homes</td>
<td>$14,458</td>
<td>$3,360</td>
</tr>
<tr>
<td>Other expenses (Clothing, souvenirs, maps, etc.)</td>
<td>$8,112</td>
<td>$840</td>
</tr>
<tr>
<td>Sporting goods (e.g., vehicle parts, fishing gear, etc.)</td>
<td>$6,685</td>
<td>$2,720</td>
</tr>
<tr>
<td>Other vehicle expenses (e.g., repairs, parking, storage, etc.)</td>
<td>$6,623</td>
<td>$5,372</td>
</tr>
<tr>
<td>Admissions and fees (e.g., golf green fees, stables, etc.)</td>
<td>$225</td>
<td>$10</td>
</tr>
<tr>
<td>Total expenditures</td>
<td>$120,362</td>
<td>$26,149</td>
</tr>
</tbody>
</table>

On average, the committed rock-crawlers spent the most ($619) during the “Big Meat Run,” followed by casual rock-crawlers ($572), frequent rock-crawlers ($412), and spectators ($393). A nonparametric Kruskal-Wallis H test was conducted to determine if there were significant differences in spending between four sub-groups of “Big Meat Run” participants. The results showed that distributions of the total expenditure were similar for all sub-groups. Median expenditure was not statistically different between groups, $\chi^2(3) = 1.954, p = .582$.

Most visitors came to the South Grand Lake area in groups with the average size of eight per group. Noticeably, 75% stayed overnight in the South Grand Lake area and mostly spent two
to three nights. More specifically, 83% of the committed rock-crawlers, 71% of the frequent rock-crawlers, and 79% of the casual rock-crawlers stayed overnight over the “Big Meat Run” weekend, a statistically significant difference in proportions, $\chi^2(3) = 13.966, p = .003$, compared to only 58% of the spectators who stayed overnight. More than half of the visitors (60%) stayed in campgrounds, 19% stayed at private homes, and 13% chose cabins.

Management Implications

The 2016 survey of rock-crawlers revealed a demand for improved restroom facilities and campgrounds. Specifically, 45.7% indicated the need for improved showers, restrooms, and shade in campgrounds; 37.2% requested larger campsites to accommodate vehicles; 32.9% asked for improved electricity, water, and sewer amenities in each campsite; 25.2% saw the needs for cabins; and 22.4% considered the area to be fine as is.

The content analysis on the open-ended question for additional suggestions and comments identified five themes for event and property management: 1) develop parking facilities and designated access to the off-road area, 2) provide trail maps and directional signs, 3) concerns about implementing a fee program, 4) litter and trash management, and 5) resolution of user conflicts and assurance of visitor safety.

*Develop parking facilities and designated access to the off-road area.* Lacking parking facilities and an easy access to the off-road area was a common comment. A dedicated parking lot for spectators and off-roaders to load and unload their ORVs was the upper-most request repeatedly cited. Many complained about traffic congestion due to illegal parking and receiving tickets because of riding a non-street legal vehicle on the state highway.
“[…] need to be able to drive non-street legal vehicles from campsites to wheeling area without trailering or risking getting a ticket: add simple dirt road beside road, need camping on-site or agreement with police to not ticket.” (Frequent rock-crawler “a”)

*Provide trail maps and directional signs.* Area maps with labeled trails, comfort stations, and markers were frequently mentioned in the additional comments. For safety and informative reasons, the survey participants also requested signs with rules and warning messages.

“The trails have been marked for the most part by private individuals but better marking would be great with maps. Use a numbering system on each trail to allow first-responders to be able reach injured people quicker.” (Committed rock-crawler “ii”)

*Concerns about implementing a fee program.* Many survey participants expressed their opposition regarding charging a user fee, while others supported the access fee but demanded an upgraded service and facility.

“If you are going to charge to use the area below the dam, then there needs to be benefits to the fee - campsites that connect to the area without having to drive on roads, bathrooms, air pumps at exits […] make sure the fee is used to visitor's benefit.”

(Committed rock-crawler “y”)

*Litter and trash management.* The need for dumpsters and trash receptacles on ORV trails, at access points, and in campgrounds and scramble areas along with no littering signage and fines were suggested by the survey participants.

“[…] it bothers me to see the litter, I've seen more litter come out of razors (than) anything else, they may throw (their) trash in back of them but when they bounce it all comes out.” (Committed rock-crawler “fff”)
Resolution of user conflicts and assurance of visitor safety. Drinking and driving, speeding or reckless driving, lacking boundaries between spectators and off-roaders, and conflicts among different ORV uses were several sub-themes identified by most of the committed and frequent rock-crawlers. Alcohol use was the leading concern and often linked to littering and dangerous ORV riding behaviors in the additional comments and suggestions. Inconsiderate ORV riders placing other off-roaders and their vehicles at risk were reported recurrently. Several demanded a rating system for different skill levels or proper zoning management to separate various ORV riders and to ensure visitor safety and quality outdoor experience on GRDA property.

“[...] I've seen off road vehicles get real close to rolling over into spectators. [...] I have over 25k invested in my (RZR) and I don't want it taken out by a drunk driver in the trails. [...] legal driving age should be applied to those rigs. Our RZR can go up to speeds of 85 and take off fast, I don't want to ride trails with someone's 10 year old kid who isn't surprised and driving stupid.” (Committed rock-crawler “ff”)

The survey participants recommended supporting services and facilities for rock-crawlers and other participants, off-road riding policies and regulations, and proper zoning and management strategies. Generally, committed and frequent rock-crawlers were more than likely to experience user conflicts and difficulty in access to the spillway, while spectators and regular ORV riders focused on supporting amenities and directional maps and signs.

Discussion and Conclusion

The study provided land managers another layer of information beyond the initial homogeneous perception of event participants by applying the theoretical construct of recreation specialization. Similar to previous studies (Bryan, 1977; Sorice, et al., 2009), four different
levels of rock-crawling specialization – committed, frequent, casual rock-crawlers, and spectators – characterizing the heterogeneity among event participants were identified. Each sub-group had distinct attitudes and preferences toward recreation settings and management strategies. To help regulate off-road activities, enhance safety and enjoyment, and reduce environmental degradation, several activity specific infrastructures were recommended. These included dedicated parking lots and loading area, designated scramble areas, trail maps and directional signs, improved campgrounds, larger campsites to accommodate ORVs, adequate access for pedestrians, and secured observation deck for spectators. Moreover, strategic zoning to separate off-roaders with different skill levels, rock-crawling policies and regulations, law enforcement and safety patrols were needed for managing off-road activities on GRDA property.

The “Big Meat Run” and the ORV activities brought substantial economic benefits to the rural Oklahoma towns. As the land management agency sought a business model to financially sustain the outdoor recreation program, several marketing strategies should be considered: 1) encourage a cluster of similar or supporting businesses in the area to support recreational use of ORVs on GRDA property; 2) develop cooperative advertising efforts including local and regional attractions so all stakeholders can benefit from tourism profits; and 3) focus on serious and skilled off-roaders and their satisfaction as they tended to stay longer, visited the area more often, spent more, and genuinely cared about their out-of-door experience and proper management. These loyal customers often generate the majority of business.

**Limitation and Future Research**

The researchers acknowledged several limitations, which may provide opportunities for future inquiries. First, using convenience sampling and online survey may have resulted in biases in the research findings, including underrepresentation of those who lack internet access to the
survey or overrepresentation of activity enthusiasts. Once the permit system is established, a comprehensive list of off-road vehicle riders to the area will provide a base for random sampling, thereby improving the generalization of the research findings. Second, the study may only reflect voices from off-roaders attending the special event. Future studies should include need assessments from local residents, businesses and government, regional tourism development organizations, and other stakeholders. Lastly, a comprehensive understanding of rock-crawlers is warranted for land managers to provide optimal leisure services. Further investigation on their flow experience, leisure constraints, place attachment, and attitudes toward environmental stewardship will enhance management practices and marketing for rural tourism development.
References


