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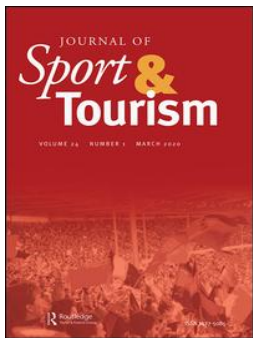
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Sport event ecotourism: sustainability of trail racing events in US National Parks

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ABSTRACT

The growth in sport event tourism to beautiful environments has led to some desirable benefits in many rural destinations, however it can also contribute to over-tourism, which is disadvantageous. This impact can be understood by examining sport event ecotourism – the sustainability and educational practices of events that occur in natural environments. The purpose of this study was to explore the juxtaposition of sport events and ecotourism by using the World Tourism Organization's (WTO) Sustainability Indicators as a framework. A qualitative approach, using participant observation, semi-structured interviews, visual ethnography and content analysis, was employed to examine the sustainability practices of Vacation Races' Grand Trailfest, which took place in a rural mountain town in Utah and throughout three national parks in the area. Findings suggest there are additional indicators extending beyond the WTO's framework: education, literacy, political/special agendas and economic development that will help better identify ecotourism practices of sport events. Contributions to theory and practical implications are discussed.

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Ecotourism; sustainability; green sport events; sport event ecotourism

Introduction

The adventure sport tourism market, which reflects activities such as trail running, climbing, hiking, rafting and skiing, to name just a few, was forecasted to reach \$1.6 trillion by 2026, representing a compound annual growth rate of 13.3% over just seven years (Allied Market Research, 2019). Such growth can arguably be attributed to natural destinations recognizing tourism as a means of supporting employment, repopulation, as well as other social and economic improvements (Costa & Chalip, 2005). Others suggest that participants, thanks to accelerating urbanization, are increasingly pursuing opportunities to recreate in open spaces, free from large crowds (Costa & Chalip, 2005; Newland & Robertson, 2018). Taken all together, this may explain why adventure sport participation, like trail running, has witnessed spikes in recent years while traditional sport and leisure activity has seen continual declines (Zhou, Chlebosz, Tower, & Morris, 2020).

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Conjointly, this industry, whether formally structured as an event or as one's leisure, has cultivated a proliferating marketplace, characterized by a cultural ethos known for its fervour for excitement, stimulation and authenticity. It has also produced a consumer base characterized by their serious leisure and loyalty to the destinations hosting events (Hungenberg, Davies, & Bailey, 2019; Yoo, Newland, & Lee, 2020). Several speculate (see Silva, Kastenholz, & Abrantes, 2013) that the fortuitous effects adventure sport consumer behaviour has had on event tourism surrounds the outdoors' inimitable qualities (i.e. rivers, mountains and surfs) and their ability to render lasting emotional connections and dependencies. In other words, if a place can provide a unique experience which dwarfs a competitive alternative, then the meaning associated with that place is intensified (Williams, Patterson, Rogge nbuck, & Watson, 1992). Locations then, which possess distinctive natural resources, are well positioned to leverage these characteristics by promoting and designing programmes that facilitate affective experiences afforded by outdoor rural environments (Newland & Robertson, 2018; Zhou et al., 2020).

However, while natural resources have been increasingly exploited for economic purposes, concerns surrounding sustainability have also swelled, drawing attention to alternative tourism models, such as ecotourism (Brandon, 1996; Buckley, 1994; Kirkby et al., 2011; Lee, Lawton, & Weaver, 2013; Weaver, 2001). Ecotourism has helped extend an understanding of contributory effects associated with tourism accommodations, activities and mobility to include not just economic stimulus, but social, cultural and environmental outcomes as well (Dwyer, Forsyth, Spurr, & Hoque, 2010; Wicker, Downward, & Rasciute, 2020). As Belsky (1999) pointed out, natural destinations represent fragile social and ecological systems, so it is likely that changes, positive and negative, will be induced by increased tourism. Recent research (see Ng, Chia, Ho, & Ramachandran, 2017) suggests that tourists' behaviour perceived as disrespectful and apathetic towards environmental impact is likely to have a negative impact on residents' advocacy and involvement for commercial tourism entities. Therefore, tourism practitioners' ability to manage event-related resources in such a way that meets the economic, social and aesthetic needs of communities while maintaining cultural and conservation interests becomes critical to the sustainability of their business interests.

Tourists' environmental attitudes and behaviours are inconsistent (Line, Hanks, & Miao, 2018), rendering a divergence in opinion about the impacts of tourism. Perceptions of impact are caused by several factors, which may include attitudes towards environmental issues (Gursoy, Jurowski, & Uysal, 2002; Timur & Getz, 2009), dependency on tourism for economic stability (Gibson, Kaplanidou, & Kang, 2012; Jurowski & Gursoy, 2004; Robertson, Newland, & Darby, 2014), over-tourism (Poczta, Dąbrowska, Kazimierczak, Gravelle, & Malchrowicz-Moško, 2020) and scale and scope of tourism development (Butler & Aicher, 2015; Getz, 2008; Mason & Cheyne, 2000), to name just a few. A common theme underscoring perception seems to be the degree to which tourism impacts the stakeholder positively or negatively (Butler & Aicher, 2015; Newland & Robertson, 2018; Robertson et al., 2014; Timur & Getz, 2009). The adventure sport participant population under study has exhibited great passion and pride in their outdoor pursuits (Hungenberg et al., 2019). Consequently, individuals who have the means to experience, enjoy and learn about the natural environment may be more acute and conscientious to pro-environmental attitudes and behaviour (Davies, Hungenberg, & Aicher, 2019; Ramdas & Mohamed, 2014; Tarrant & Green, 1999). However, little empirical support has been

disseminated that explores the perception of a sport event's ecotourism and sustainable efforts on a destination (Sotiriadou & Hill, 2015). Thus, it warrants exploring the degree to which this subculture's connection to the outdoors influences sport event's impact.

Bulatović and Rajović (2016) argued sustainable tourism includes economically, socially and environmentally sustainable practices. Recently, Carneiro, Breda, and Cordeiro (2016) posited that the triple bottom line was too confined by its traditional dimensions (i.e. economic, sociocultural and environmental). The authors believed that there may be additional dimensions relative to specific contexts that have failed to be recognized. Others suggested the use of sustainability indicators provides an objective way of measuring and monitoring sustainability (Bulatović & Rajović, 2016; Mearns, 2010). Due to a novel context under study, this research aims to identify impacts consistent with the World Tourism Organization's (WTO) indicator framework, as well as others, which may offer new insights for future studies in sport event ecotourism.

To begin, the purpose of this study was to explore sport event ecotourism by examining ecotourism practices of 'vacation racing' on the United States National Parks. In pursuit of this objective and to respond to the gaps, we aim to expand on the ecotourism and sustainability literature, while determining the efficacy of the WTO indicators as a framework for analysis of sport event ecotourism. The following research questions guided the study:

RQ 1: What WTO indicators are achieved during a race in a remote destination?

RQ2: How do the WTO indicators help to identify sustainable practices?

RQ3: How do the WTO indicators help the sport event meet ecotourism outcomes?

Literature review

Ecotourism and sport

Ecotourism has grown because of an increased concern for the environment coupled with the negative consequences stemming from mass tourism, which led to increased demand for more remote nature-based travel (Blamey, 2001). Researchers have grappled with the best way to define ecotourism as it is disparate from nature-based travel (Orams, 2001). Through the debate, three core traits have been identified: (1) the travel is nature-based, mainly in relatively undisturbed ecosystems; (2) ecotourist motivations are educational, through both formal and informal interactions and (3) ecotourism is sustainable and focuses on minimizing the economic, sociocultural and environmental costs to the location (Lee et al., 2013). Ecotourism is seen as a subset of nature-based tourism because not all nature-related travel meets the criteria for education or sustainable practices (Orams, 2001). While many operators have the best intentions to be sustainable and conservation-oriented, their activities could still be detrimental to the location, which is often no better than mass tourism (Brandon, 1996; Orams, 2001). For the purposes of this study, we apply popular frameworks of ecotourism as travel to a relatively undeveloped natural destination with the intended goal of acquiring knowledge of, enjoying the natural setting and learning about the cultural elements of the area (e.g. Fennell, 1999; Lee, 2007; Lee & Jan, 2018).

In line with this definition, sport ecotourism is a form of sustainable sport tourism that occurs in largely untouched natural environments, mainly in rural destinations (Costa & Chalip, 2005; Singh, Dash, & Vashko, 2016) where athletes seek challenging endeavours and landscape yet to be conquered. *Sport event ecotourism* follows that same definition, but with a specific focus on the ecotourism practices of the sport event itself. Much of the ecotourism research to date has focused on adventure tourism (e.g. Musa, Hall, & Higham, 2004), but most studies in this area should be classified as nature-based (e.g. Williams & Soutar, 2005) given they fail to meet the three elements of ecotourism (Orams, 2001; Weaver, 2001). Other studies focus on sport events in rural, remote environments, which are sought for the beauty, terrain, challenge and adventure they provide for the sport events (Aicher & Brenner, 2015; Newland & Robertson, 2018; Robertson et al., 2014). From a private sector perspective, organizations like Vacation Races, which promote and organize running events in the beautiful destinations have also capitalized on individuals' affinity for the outdoors. The trail running industry specifically has seen a 9.9% increase from 2018 to 2019 and marks the continued increase in the number of trail runners and events over the past decade (SIFA, 2020).

Other research has tied sport tourism to ecotourism (e.g. Singh et al., 2016), but has not explored *sport event ecotourism* specifically. Research in the sport context has largely focused on spectatorship and air pollution (Casper & Bunds, 2017; Locke, 2019; Triantafyllidis, Ries, & Kaplanidou, 2018), sport participation and the carbon footprint (Wicker, 2018, 2019; Wicker et al., 2020), the environmental concerns of runners (Davies et al., 2019; Triantafyllidis & Kaplanidou, 2019), and the environmental legacy of major events (e.g. Collins, Jones, & Munday, 2009; Death, 2011). However, one gap in this review was sport event ecotourism, which comprises tourism driven by sport events that focus on the natural environment, and elements of education and sustainability.

Sustainability

As a critical element of the ecotourism criteria, sustainability enables locations to measure event and tourism economic, socio-cultural and environmental impacts (Getz, 2008; Stoddard, Pollard, & Evans, 2012). Sustainability indicators provide a foundation for the planning, management and monitoring of tourism activities (Blancas, Gonzalez, Lozano-Oyola, & Perez, 2010; Choi & Sirakaya, 2006; Thomas, Williams, & Trotz, 2014; WTO, 2004). These indicators provide information on the impacts of tourism development and the environmental, socio-cultural conditions and the economic benefit of such activities on the host destination, otherwise known as the triple bottom line (Bien, 2006; O'Brien & Chalip, 2007; Stoddard et al., 2012). Sustainable activities are those that can occur indefinitely and manifest as: (1) environmental activities that minimize the damage to flora, fauna, water, soils and energy use; (2) activities that maintain, revitalize and protect social structures and cultural elements; and (3) economic undertakings that contribute to the well-being of the community, not a small few (Bien, 2006; O'Brien & Chalip, 2007; Thomas et al., 2014; WTO, 2004). A priority of ecotourism is that it offers an important source for financing the conservation of protected areas, like national parks (Brandon, 1996). For example, sport events that operate in a relatively untouched natural area donate a portion of the proceeds to the national park to support conservation efforts.

Belsky (1999) points out that tourism, as referenced previously, yields both positive and negative outcomes when social and ecological systems are treated as commodities. Negative impacts from all forms of tourism occur when the level of visitor use exceeds the environment’s ability to tolerate the use within acceptable limits of change (United Nations Environment Programme, 2020). Commercial exploitation of natural areas can lead to impacts such as soil erosion, increased pollution, natural habitat loss and reduced water supplies (Lozano-Oyola, Blancas, González, & Caballero, 2012). Unquestionably, destinations lacking economic alternatives to tourism, aspire to improve the standards of living for residents through the economic impact visitors induce (Carneiro et al., 2016). However, in commodifying the outdoors, locations should not ‘destroy the resources on which the future of tourism will depend, notably the physical environment and the social fabric of the host community’ (Swarbrooke, 1999, p. 36). Thus, the juxtaposition that is marketing nature to prompt increased access and revenue while recognizing the potential concerns of overuse highlights the relevance of this research.

World tourism organization indicators

Currently, there is no consensus about how to accurately quantify tourism sustainability, nor is there a universal methodology accepted to measure the impact on host destinations (see Torres-Delgado & Saarinen, 2014). However, the impact of sustainable tourism is meaningless without monitoring tools (McCool, Moisey, & Nickerson, 2001). While many scholars have begun to examine the range of possible indicators (see Blancas et al., 2010; Kristjánsdóttir, Ólafsdóttir, & Ragnarsdóttir, 2018; Torres-Delgado & Saarinen, 2014), the WTO provides a comprehensive framework termed the Indicators of Sustainable Development for Tourism as a starting point (Blancas et al., 2010). The WTO (2004) indicators (see Table 1) are measures of the existence or severity of current issues related to the triple bottom line and provide measures of risk, a need for action, and a means to identify the results of action. The indicators support information-based

Table 1. WTO core indicators.

Sustainability element	Core indicator	Example	Type of indicators assessed
Environmental	Waste management	Waste produced at event	<ul style="list-style-type: none">• Early warning indicators• System stressors• State of the industry• Impact of tourism on biophysical and socio-economic environments• Management efforts of protection, maintenance and development• Management effect or performance
	Critical ecosystems	Impact of event on flora/ fauna	
	Site protections	Evidence of protected areas	
	Stress	Tourist numbers impact on site	
	Developmental planning	Protocols or controls in place for overuse	
Socio-cultural	Use intensity	Stringency of use	
	Social impact	Impact of event on locals	
	Planning process	Involvement of locals in tourist activities	
Economic	Customer satisfaction	Level of satisfaction of visitors	
	Local satisfaction	Level of satisfaction of locals	
	Contributions of tourism to locals	Contribution of tourism to parks and local area	

Note: Adapted from WTO (2004).

decision-making at the national level (broad changes in tourism), regional level (plans and processes, tourist impacts), specific locations (key assets, state of tourism), key tourist sites (protected/historic sites, site control), tourism companies (organizations that can assess impact in location) and individual establishments (monitor impact of operations of local organizations). Mearns (2010) asserted these indicators can measure changes in the internal and external factors that affect and are caused by tourism.

Sporting events, especially those that rely on the natural environment, can have negative impacts on the necessary resources required to host the event. These events can easily upset the sensitive ecosystems and disrupt the daily life of residents. While there is research on event ecotourism (e.g. Getz, 2013; Lawton, 2009), there is no research on sport event ecotourism, especially the impact of multi-day, stringent use of natural resources, increased waste production and high stress to sensitive or protected areas generated by mass participation.

Method

The purpose of this study was to explore perceptions of sport event ecotourism by examining the practices of Grand Circle Trailfest. Given this study was perception-based, the researchers felt a qualitative approach to be the best research design (Creswell, 2009). That way, the team could fully immerse themselves in the event to ensure prolonged engagement, where formal and informal discussions could arise, and behaviour could be observed over time (Creswell & Miller, 2000).

Research context

Vacation Races hosts 18 events annually, which include half marathons, ultramarathons and trail races across the United States' natural parks, exposing thousands of runners to much of our untouched natural resources. Vacation Races invites runners to, 'Come. Not to achieve your personal best time, but to have the best time of your life' (Vacation Races, 2020). To understand the environmental, social and economic indicators of such events on a rural destination, we investigated the ecotourism practices at the Grand Circle Trailfest in Kanab, Utah.

This event is a three-day festival that brings nearly 700 racers and guests to a small mountain town in southern Utah called Kanab. The event includes a large food area where breakfast and dinner are catered each day, a large stage for presentations and entertainment, as well as a space for vendors throughout the weekend. Hundreds of tents over the town's baseball diamonds are setup for racers and guests to sleep on site. Each morning, the racers drive to one of three national parks in the region (i.e. Bryce Canyon, Zion and Horseshoe Bend) or can pay an extra fee to have a shuttle direct from the campsite to the trailhead. Some participants did stay in local hotels as well.

Data collection

A naturalistic, qualitative research design using participant observation, semi-structured interviews, visual ethnography and content analysis guided this investigation (Lincoln & Guba, 1985). Participant observation (Jorgensen, 2015) was used to document the

behaviours and interactions of the sport tourists, their travel companions, event directors, volunteers and locals. Semi-structured interviews with 16 participants (12 runners, 1 event contractor, 1 race director, 2 residents) using a purposive sampling approach were utilized. Saturation of responses determined the number of participants. The semi-structured format probed for attitudes and behaviours toward the sustainable practices of the event organizers and the national park. To triangulate the data from the interviews, we also engaged in visual ethnography and content analysis. Visual ethnography (Schwartz, 1989) was used to record the condition of environmental surroundings based on the indicators of sustainability as outlined by the WTO in Table 1 (WTO, 2004) and to document the sustainable practices and behaviours of the participants (Rookwood & Palmer, 2009). Photographs can enhance and support narratives and lead to new explanations, and help mitigate researcher misinterpretation (Hurworth, 2003; Rookwood & Palmer, 2009). We collected several photos, which intended to capture the following event-related elements: (a) trail during the race, (b) water stations, (c) start/finish lines, (d) campsite and (e) the food tent. Finally, a summative content analysis of Vacation Race's website and public documents was conducted to understand the attitudes and behaviours of the event organizers toward sustainable ecotourism (Hsieh & Shannon, 2005). Given this study was guided by the WTO indicators, a summative content analysis was used as its purpose is to explore usage, not to infer meaning (Hsieh & Shannon, 2005).

Participants and procedure

Interviews were conducted with runners, residents, an event contractor and an event director. A purposive approach was used to solicit information from participants with knowledge of the event to gain a deeper understanding of perceptions of sustainability practices. Participants were solicited from local businesses, campsites, race sites and the food and beer garden areas. Data were collected using semi-structured interviews by the research team conducted in-person or recorded via telephone (the event director only). A total of 16 interviews were audio-recorded for later transcription. Interviews ranged from 8-minutes to 38-minutes, with an average length of 25-minutes. There was no *a priori* time limit for the interviews, which allowed the participants to speak freely without the pressures of time. Participants were briefed about the project and verbal, voluntary consent was recorded prior to the start of the interview.

Data analysis

The 16 interviews were transcribed verbatim and entered into a codebook for analysis. Data were analysed using the WTO (2004) Sustainability Indicators (see Table 1). Emergent categories formed inside and outside of this framework. All four researchers coded the first interview separately, then met to discuss how the codes were applied to the data. Once consensus was reached, the research team split into pairs of two to code the remaining interviews. As with the first interview, each pair coded the data separately, then met to discuss how the codes were applied. A simple agreement was used to calculate the percent agreement between coders by assigning a .00 (agreement) to 1.00 (no agreement; Lombard, Snyder-Duch, & Bracken, 2002). This number was then divided by the

number of codes, resulting in 83% agreement. Further discussion ensued with the entire team until consensus was reached.

The photographs were analysed for sustainable practices as outlined by the WTO indicators. Taking photos allowed the research team to carefully observe the environment to better see the elements not perceived and/or to better document clear examples of an indicator (Monnet, 2014). The researchers each commented upon the pictures, which allowed the team to identify key indicators in the photos (Monnet, 2014).

Data quality

Four procedures were utilized to assure the quality of the data: (a) prolonged engagement (researchers spent three full days interacting with participants taking part in the Grand Circle Trailfest), (b) search for alternative explanations, (c) triangulation and (d) purposive sampling (Lincoln & Guba, 1985). The prolonged engagement allowed the researchers to immerse themselves in the event to better understand the overall event and build trust among the event organizers and participants (Cope, 2014; Lincoln & Guba, 1985). Triangulation was employed during data analysis where the researchers conducted an audit of the preliminary themes based on the raw transcript data of interviews, documents, participant observations and photographs (Cope, 2014). During the coding, the team repeatedly considered alternative explanations of the findings. Finally, purposive sampling of interviewees maximized the information we were seeking about the event and its sustainable practices.

Findings and discussion

Using the WTO Indicators as an initial framework, responses from the interviews were coded based on three categories and the six original core indicators with four new indicators emerging. Table 2 illustrates these findings.

Environmental elements

These environmental characteristics of the event location and the campsite where the majority of the participants stayed, made it easy for participants in this study to be cognizant of the environment. Most of the photographs and observation notes were linked to

Table 2. Frequency results of indicators.

Environment (<i>n</i> = 107)	Socio-cultural (<i>n</i> = 60)	Economic (<i>n</i> = 25)
1. waste management (<i>n</i> = 23) 2. critical ecosystems (<i>n</i> = 6) 3. site protections (<i>n</i> = 6) 4. stress (<i>n</i> = 12) 5. developmental planning (<i>n</i> = 15) 6. use intensity (<i>n</i> = 6) 7. *education (<i>n</i> = 23), defined as the specific learning of sustainable practices 8. *literacy (<i>n</i> = 16), defined as awareness of the importance of sustainability	1. social impact (<i>n</i> = 8) 2. planning process (<i>n</i> = 11) 3. customer satisfaction (<i>n</i> = 15) 4. local satisfaction (<i>n</i> = 18) 5. *politics/special agenda (<i>n</i> = 8), defined as personal agendas that might not be in the best interest of the community	1. contribution of tourism to locals (<i>n</i> = 13) 2. *economic development (<i>n</i> = 12), defined as activities or initiatives that could lead to economic impact.

*New indicator.

Table 3. Environmental findings.

Environmental Indicator	Participant/ Document	Quote
Waste Management	VR email	Thank you for your support as we try to minimize the amount of waste generated by our events. The park has several trash cans, but our waste receptacles are separated into 30 bins: compostable items go into the GREEN bins (all of your dinnerware can be composted), plastic/paper/ cardboard can be recycled in the BLUE bin while all other trash can go in the BLACK bins (and park trash cans). (Vacation Races participant email)
	Runner 3	... the emphasis has been on no impact, no garbage, no waste. That type of thing I've seen more than anything else, besides maybe encouraging recycling.
	Runner 4	The composting options for your waste, and the composting toilets – that's something I've noticed that's new.
	Runner 3	[the lack of cups] – that's so that's huge, because, I think I heard somewhere between 650 and 700 people are at this event, and you figure all the cups that would be used in any other race. And they're really pushing that people be more responsible about their waste. I really appreciate that.
	Runner 11	I mean some of them [runners] are just awful. There's, like, people are throwing wrappers everywhere. I mean, there's paper cups all down the street. You know, so I feel like it [Trailfest] was pretty well done actually
	Runner 10	She's [motioning to Runner 9] participated in road runs, and those aid stations - you know, grabbing a paper cup and you toss it [to the ground] as you run by and so just the concept of a cupless event in the first place for when we're on the trails. They do a really good job here, which is important. But really, when you get out into those trails and the parks to me, that's even more important that we don't leave a big mess behind every event.
	Runner 1	For us? It's the things that they haven't done yet. Yeah, like she [motioning to Runner 2] already mentioned, when she first walked up to the forks and spoons, why shouldn't everyone bring their own [reusable cutlery]? You go to the beer garden, we actually brought our own cups thinking it's protecting the environment. Like of course, you have your own cup. And they wouldn't let us - you can't even reuse a plastic cup for your second beer!
Critical Ecosystems	Contractor	We had some folks who went out there with ice crampons, because it was ice and snowy, and crunch, crunch, crunch. Every time I take somebody out there, I show them the marks that will be there until they get eroded away. You know, from one person walking out there not knowing what they were doing and not being educated. And there it is, that mark is going to be there as long as the petroglyphs are there you know, dinosaur tracks.
Site Protections	Local 1	You know, it's not smart to build a mine and it's going to waste water, you know? Long term effects. They [city officials] have no clue what they're doing.
	Runner 4	I've done a couple other vacation races, Yellowstone and the Tetons, and I just appreciate how much work they put into also making sure that people get to see the national parks and then also don't leave any traces. [And that runners] don't damage anything.
	VR Website	100% funds are donated directly to the National Park friends groups like Yellowstone Forever, Yosemite Conservancy, and Friends of the Great Smoky Mountains. In 2019 we had 129 people successfully raise \$185,610.02.
Stress	Event Director	Yeah, I guess our biggest concern is if there was bad weather, because obviously there's bad weather ... we're going to rut out (sic) trails and things like that so we'll try and be very cautious about that ... a lot of the trails we use are mountain biking trails and want to be good neighbours. It's also public lands and so, yeah, especially in southern Utah, some of the places we run you know that it rains and the trails just get so bad. Not only is it dangerous for runners but that can chew up a trail real nasty (sic).
	Contractor	... that's a lot of fuel, you know, to bring everyone here, like that. You have to consider that.
	Local 2	

(Continued)

Table 3. Continued.

Environmental Indicator	Participant/ Document	Quote
Developmental Planning		The more people we get moving towards business and industry, it's created some issues. And different places, you know, Peekaboo down here, it just gets so overused. It's crazy, since it's a little tiny slot canyon, but everyone wants to go to Peekaboo. I don't even go there. I don't want to deal with it, because you go down there and there's people at all times. They've turned the road into such a mess trying to get in and out of there. People that go and get stuck and then by the time they get out there's big holes in the road and so it has kind of created the situation where yeah, it's hurt the environment.
	Runner 5	There's a caravan of 800 cars going by. Why are there not more buses? Would that be better? Or is this worse? Or, should you be closer to where you're running [start line]? But, logistics are logistics, right?
	Event Director	Sometimes you know you wonder, like, if it's worth the effort. Or if it's making a big impact. Like, we get our finisher medals. And, you know, the first time we got them they're individually wrapped in plastic. And so, then we tell them, 'Hey, don't wrap them all. If you can, bundle them so let's have, you know, 12 to one small bag or wrap a rubber band around it or something like that instead of instead of wrapping them all individually, right? So, there's little things like that with our suppliers that we try and communicate with them.
	Research Observation	Messaging from the event 'do not run/walk two abreast, do not have headphones in so that you cannot hear audio cues from fellow runners, move over to the right to allow faster runners to pass, do not litter; pack your trash out with you'
Use Intensity	Contractor	And they [BLM] asked us for our input because we're the ones out there [in the parks]. And we were like, no, please do not increase them [the number of permits] because of the impact on a very, very delicate ecosystem. Part of the experience is that when you go out there, you know that there's only going to be maybe 20 other people out there. And that is a value. You know, there's like a lot of places like the main hikes in Zion, it's like an assembly line, you know ... Everest or in Australia, Ayers Rock, they finally are honouring the indigenous folks desire to leave that be so there's this bum rush of people to hike it before they closed it off.
	Event Director	... Um, the impact is substantial on the day of the event. But I don't think the event has a significant long-term impact on trails. They are maintained and their purposes are for mountain biking and hiking.
	Local 1	... but even with Grand to Grand [another event in the area], I offered my time a few years back, and it just was a mess - a mess. People were tearing up roads, trying to get to places like where people are camping for the night. And you know, and yeah, that's had a complete impact on some of these areas ... Yeah, I mean, when you go from a million and a half to four and a half million in a year, you know, I mean, hello. That's crazy. It's crazy the impact that that makes. And, people are carving on the walls and garbage everywhere, and it's just sad. It's sad.
Education	Runner 12	I would say sustainability was definitely a conscious effort that was educational to me.
	Runner 5	Before it [racing] was for the adventure, but now, you know, I'm starting to learn things [about sustainability] that I didn't know about. So, it just wasn't something I was really aware of because we don't do it.
	Runner 6	The people that participate have a philosophy to [recycle]. If you don't, and you're the outsider, you're looking around like, 'Oh, yeah, this is recyclable.' Really, I normally probably wouldn't do that. They've [Vacation Races] done a nice job with the education aspect, too. I thought it was nice that they had the Leave No Trace people speak, you know, just give a little bit - but not too overbearing - a little bit of education on some of the tenants of their approach.
	Event Director	You know they're [runners] doing about 10–13 miles each day, which is still significant but we have aid stations on course. Mostly, our biggest stick that we can use to influence our runners is education. It's educating them on the areas ... they're remote so it's hard to really monitor courses and

(Continued)

Table 3. Continued.

Environmental Indicator	Participant/ Document	Quote
Literacy	Contractor	what people are doing out there. And so, we just educate them and remind them about the fragility of the areas that we're running in, the impact that they can have if they go off trail, and these trails are maintained and they're there for a reason. So, don't go off them because the way that we have minimal impact is staying on the trails. ... to just spread the knowledge of how important this is to, you know, you could come here, sure, you could tear these cliffs down to get coal or whatever - once, you know? When you educate the next generation and the next generation on the value of having a place like this, and what proactive steps need to be taken to protect it. And it's our land.
	Local 2	... you know, it's funny because they'll [BLM] give people books and pamphlets and things like that to try to explain things. I'm telling you, I've worked at Lake Powell for 25 years, put a picture out there, show the damage, show people what's going on, then they get it. You can read about it, but they don't care.
	Runner 2	I hope more people in races, especially your bigger races, take note how much they're [Vacation Races] actually potentially impacting the environment with their no-cups and their eco-friendly ways.
	Runner 9	I've never been to an event that cared so much about composting and recycling. I mean, none of the events I have ever gone to were that conscientious about it and then having speakers coming to talk about, like, specific things [e.g. Leave No Trace] ... I mean, reusable cups and bring your own cups and stuff like that. I've never seen anyone focusing so much on that.

environmental sustainability as well. Table 3 illustrates the findings with key quotes followed by a narrative of the findings.

Waste management

To understand the environmental sustainability indicator from this Vacation Races Trailfest, participants were asked to note their observations of the event with respect to its waste management efforts. Trailfest runners often noted that the messaging around making the Grand Trailfest a zero-waste event both on-site and in their pre-event materials. The runners observed the move toward zero waste, as noted in Table 3. However, in practice, the colour coding of the bins did not align with the messaging. Figure 1 displays three photos of how the trash was collected in practice. The researchers observed that people were not adhering to the guidelines for how to dispose of their waste appropriately. To combat this and to further educate, event organizers added more signage on day two and stationed volunteers at the bins to direct people on how to properly dispose of their mealtime waste. While some

**Figure 1.** Waste management on-site.

runners noted areas of improvements (see Runner 1 in [Table 2](#)), others discussed the difference between this event and the road races the participants normally competed in road races.

Critical ecosystems

Only the two local residents and the event contractor highlighted issues for the critical ecosystems. One resident shared that he could see that the resources could be scarce in a place like Kanab. Further stating that previously living in California and seeing droughts first-hand was eye-opening for him in realizing the delicate nature of the region. The contractor, a local tour guide, discussed the potential damage that tourists can have on these delicate formations (e.g. the 'wave' at the Vermillion Cliffs) when they do not properly follow the rules for engaging with the land (see [Table 3](#)). This indicator demonstrated how tourism in protected areas can negatively influence the ecosystem when there is a lack of education or supervision.

Site protections

Site protections were highlighted primarily by the locals. They were concerned with both the lack of sufficient rangers monitoring some of the park spaces and a prospective mine to be built in the area. Local 1 expressed concern about the prospective mining project as it had not been well thought through and believed it will significantly impact the ecosystem and tourism. Local 2 had similar concerns, and also noted the softening of the current restrictions to visit the nearby canyons. He outlined the role that permits restrictions (or lack of) had over the past 20 years. Specifically sharing his observation of the need to protect land from human excrement damage and the importance of the requirement for portable and compostable portable toilets (see [Figure 2](#)).

Runners noted event organizers efforts to protect the site as highlighted by Runner 4 in [Table 3](#). Vacation Races also developed a foundation called the Wander Project. This foundation created a charity bib programme, where athletes can waive their entry fee to raise a minimum of \$1000 for half marathons and \$2000 for ultra-distances. The Vacation Races website denoted 100% of the funds raised support site protections and conservation efforts.



Figure 2. Compost toilet.

Stress

Several environmental sustainability issues raised were related to the environmental stress caused by many people visiting the region. The research team clearly observed the stress indicator via stress from travel to Utah, road stress created from the logistics of travelling to the remote starting locations, and stress to the trails themselves by runners. For example, to get to each start line, participants must drive (or take the paid shuttle) at least one hour. Each morning, hundreds of cars, all created added stress, CO₂ emissions and congestion on the roadways (Figure 3).

Interestingly, the stress of the cars did not seem to be a concern to the event organizer who admitted it was the trade off so people could have the flexibility of visiting the national parks after they were done racing. The juxtaposition of tourism opportunities and sustainable efforts was glaring. Rather, the event organizer focused on the stress that poor weather and mass participants on the trails could cause (see Table 3). The locals, on the other hand, noted the impact of over-tourism, which is not helped by the mass participation sporting event. Local 2 recognized the overuse of some areas, particularly the access roads to canyons and the impact of traffic to more delicate canyons. He continued to explain his disagreement with the Bureau of Land Management's (BLM) consideration to add permits to visit some of the highly controlled areas, and reluctance to bring his own clients to the sensitive areas. Trail stress was particularly salient to this research study as the event involved bringing about 700 racers on approximately 13 miles of remote trails daily.

Developmental planning

Developmental planning focuses on the protocols put in place to reduce overuse. One runner noted that she had concerns about the logistics associated with getting runners to start lines. As noted above, the race took place in a different national park each day, ranging from one hour to a 90-minute drive from the Kanab campsite. While shuttles were provided, only a few were available and the fee to travel on them limited their use.

One researcher's participant observation noted Vacation Races messaging about trail etiquette both verbally in morning messages and via text in participant emails. As a trail runner, the researcher understands the importance of trail etiquette as part of



Figure 3. Traffic to start line.

sustainable efforts that combat trail erosion. Despite the messaging, she observed numerous instances, especially at the start when the pack had not yet thinned, where athletes were forced to run on protected areas because others were blocking the trail with their slower pace or picture-taking (Figure 4).

When asked about developmental practices, the event director focused more on waste management practices, and did not focus much on trail logistics and behaviours. When asked about the trail, the event organizer discussed the removal of course markings and their general environmental policies. He failed to discuss how they could influence trail erosion behaviours (beyond the highlighted announcements in Table 3).

Some participants shared positive perspectives on what Vacations Races had done to minimize impact. Local 2, who sees this event come and go every year, noted the limited effect the campsite had on the town baseball diamonds once the event concluded. Runner 6 noted how the organizer designed the courses well by limiting bottlenecks or the need to pass other runners off the trail, thus easing the effect on the environment around the trails.

The event organizer made a conscious effort to minimize the effect on the environment. He explained that he tries to avoid handing out 'random junk' to participants and encouraged participants to bring their own bags to collect the items they do provide. As Table 3 illustrates, he also discussed trying to be more efficient with the finisher medals.

Use intensity

The use intensity indicator reflects the stringency of use to the location. This was apparent when the researchers toured the parks after the event. The trails were so crowded that it was nearly impossible to ascend to the top of some trails, as noted by event contractor in Table 3. When the event director was asked about the use intensity of over 700 runners on the trails, there was acknowledgement of the impact on the day, but it was passed off as part of its intended use. However, despite the event director believing there are no long-term effects, the locals tell a different story, as Local 1 indicates in Table 3. The Grand Trailfest is one of many mass participation events that attract many people to the area, and each creates greater use intensity.



Figure 4. Trail etiquette.

Education

Education emerged as a major theme and an important indicator of environmental sustainability. This was especially salient among many of the runners who mentioned education in some way as Table 3 demonstrates. For example, runner 12 noted that the actions of others and the appreciation for the environment really made a difference for her experience. The event director also discussed the importance of education, especially when the runners are on the trail and cannot be directly monitored. While the event director discussed the importance of education through the means of etiquette emails and race briefings, it was observed that not all runners attended the briefings at the campgrounds. At the start lines, runners were milling about as the announcements were made, with only a few actively listening. Behaviours observed by the researchers during the race indicated that many did not understand the importance of staying on the trail.

The local contractor also noted the importance of education to protect the land's beauty from over-tourism and destructive actions that strip away resources. Local 2 also explained the importance of how to educate to influence behaviour. He shared that kindness is the best way to make tourists aware of the affect they have on such a fragile ecosystem, and referenced the training, books and other types of education provided by the visitors' centre. Signs throughout the parks remind people to be more aware of the damage they can cause, but no signs included pictures of the damage, as the locals suggested (Figure 5).

Literacy

Literacy emerged as another major theme and an important indicator of environmental sustainability. Closely related to education, literacy represented an awareness of the importance of sustainability. The runners related what Vacation Racing was doing with the cup-free aid stations in comparison to other races. Some runners stated importance of the events' environmental sustainability in their decision to attend the event. The race director noted the race attracts a more conscientious crowd who are more motivated to help the environment, and that runners can often be entitled and want to be catered to. Sometimes, to cater to these athletes, it comes at an environmental cost. This became visible when he discussed the boxed lunches at the end of the race that contained individually wrapped-in-plastic foods. The benefits of reducing aid station and campground



Figure 5. Trail signage.

waste were lost at the finish lines because the event director perceived the runners to have 'certain expectations' (Figure 6).

Socio-cultural elements

The socio-cultural sustainability indicators were referenced by participants about half as often as environmental sustainability. Originally, the WTO defined this category as the conservation of the destination's built and living cultural heritage and traditional values, and the contribution to inter-cultural understanding and tolerance (WTO, 2004). Emerging from this research were social impact, the planning process, customer satisfaction, local satisfaction and the newly identified theme, political/special agendas. Table 4 illustrates the findings with key quotes followed by a narrative of the findings.

Social impact

The social impact indicator identifies the event's effect on locals. This emerged as concern for the locals due to the campsite's proximity to residences. Runner 3 noted the social impact as the opportunity to interact with local performers and artists (the local Navajo tribe performed and sold artwork). However, some runners failed to notice an impact of the event on the locals with runner 2 exclaiming, 'Oh, I was wondering about that!' after the researcher had asked for specific observations on the impact of the event. The event director noted how there were planned opportunities for the runners to engage with the residents to learn about the local culture (see Table 4).

Planning process

The planning process indicator identifies the locals' involvement in tourist activities. Several runners observed the local's involvement. Runner 7 observed a relationship with the local Parks and Recreation department to host the campsite at the ball grounds. Other runners noted that many of the locals were volunteers and/or vendors. The event director discussed the importance of the relationship with the Navajo Tribe and the BLM because the racecourse traverses their land. He discussed the importance of the community in the production of the event, especially at the campsite. While he said the Parks and Recreation department were crucial in access to facilities, the community helps much with logistics.



Figure 6. Aid station.

Table 4. Socio-cultural findings.

Socio-cultural indicator	Participant/ Document	Quote
Social impact	Runner 5	We felt a little bit bad for the residents on the street and I'm sure this [gestures to full campsite] is very different than what they're used to. Trailfest though, this is a very tame event. It's not like a concert or something where people are up late and it's loud.
	Event Director	We also are trying to create an atmosphere where people are comfortable and can interact with each other and kind of engage with the local history and culture. And so, we provide lots of opportunities for that at our headquarters [campsite]. We have some friends who do, cultural and tribal presentations, both Navajo and Paiute. And so, they [runners and spectators] do love the cultural presentations.
Planning process	Runner 4	The food is all very local. That's something that's new to me as well. The options they're using are all very eco-friendly. I like that they [Vacation Races] look at the local businesses and do their homework on that end as well.
	Runner 7	There must be some kind of donation back to them [local parks & rec] or something. And if not, there should be because it does impact whether these kids are able to play baseball for this weekend or this week.
	Runner 10	A lot of the volunteers are from here, locally, which I thought was a great thing and I think some of their hired staff is from this general area.
	Event Director	... and with the Navajo Nation, and more specifically those families that have grazing rights to where we're running, those relationships are just absolutely critical. Now we can't do the events without them.
	Event Director	... for instance, we set up all those tents and baseball fields. Right? It's hundreds and hundreds of tents. So, we have to set it up and the community comes out and helps us do that.
Customer satisfaction (pos)	Runner 7	The National Park is a great environment. I'm glad we didn't go stay in a hotel. I'm glad we got to do the chanting [Navajo presentation] and being with other people.
	Runner 8	They [VR] make the information easy to understand. I mean, you sort of know what you're getting into whether you like it or not. So, I think they've done a nice job.
	Runner 9	It's [the event] been really well organized. These guys have just done an awesome job with the planning and preparing you ahead of time and knowing what to expect when you get here. It's been good.
Customer satisfaction (neg)	Runner 12	I'm not used to Vacation Races, but I think it's like \$600 for the race and then they're gonna say, 'Are you going to pay to get to the race?' I don't know ... and when you get here. It's like, 'oh, you're gonna have to pay \$20 a day for a shuttle'
	Runner 11	It's almost like you felt a little like you got nicked and dined. Like, okay, the a la carte starts happening, but that could have been stated before [the race]. I don't have a habit of reading a lot of details. I have a planner over here (points to Runner 12). That's where I got all the details. So, I could have missed that on the registration.
Local satisfaction	Runner 1	We haven't seen it but we've been worried like, 'oh, what about these people here?' (motions to people's houses along the campsite) ... Does it seem fine to them? I mean, if I lived there, I'd be like, 'well how fun I've got 700 people in my yard' ... Yeah, if you can't park in your front yard then we've kinda gotta be a nuisance.
	Event Director	They're [local residents] very supportive and they offer their facilities for us to use and we also have a lot of connections with the Rotary Club, we call them the 'Kanab do gooders', but basically they are just a nonprofit volunteer group, and people like that in the community. Those relationships are critical.
	Local 1	most locals are pretty receptive to events coming into town and tourists coming into town ... the negative again, is the traffic and I like it quiet. I like that it used to be that winter we didn't have anyone around. So, in some ways it was nice to have a timeout, but I don't think that's happening anymore. I know I've talked to several people that live here that are going to move because of the traffic or the extra people, you know.

(Continued)

Table 4. Continued.

Socio-cultural indicator	Participant/ Document	Quote
	Local 2	So most of the people that I've found that I've dealt with have actually moved in here because of these events! ... there are people that love it and people that hate it. Me, personally, I don't see a problem with it [Trailfest-related tourism]. I think it's a good thing, you know, as long as they do it right and keep it environmentally right ... it definitely impacts it [the environment] for sure. There's no question. I mean, you can't deny that. But once again, I think Trailfest, honestly, Trailfest has been really good about being environmentally safe and conscious, and yeah, it does affect a lot of these things.
Political/Special agenda	Local 2	You get different companies and, like, our city councilman and stuff too, none of them go out to do this stuff [tourism business]. Yet they're making decisions based on what they think is better for the town and the fact that mine will have a huge environmental impact on this town. And people in this town are up in arms over this one. The City Council kind of decided on their own and 100 people in there saying 'no, we don't want it!' They didn't care. They'd already made up their minds and their decisions ... Those guys, you know, I mean, it's about the money for them. When you're money motivated, that stuff [environmental protection] doesn't matter. You know, when you're not money motivated, when it's more about the event, the area, the beauty, then it makes a huge difference, for sure.
	Local 1	... and so, there's kind of a battle right now. They're attempting to start fracking the sand out by the sand dunes which is madness, you know, it's such a delicate environment and it's our aquifer. I mean, that's it, that water out here is precious, and they just kind of rubber stamp a 20-year lease for it. And they're like, 'oh, we'll just use it to rinse the sand, it will be fine'. It's like no it's not just like that. There's (<i>sic</i>) chemicals and there's the Ponderosa pines and the ecosystem out there is so delicate that they were fighting. It's crazy, you know?

Customer satisfaction

The customer satisfaction indicator identifies the visitors' satisfaction. The runners clearly expressed their satisfaction, as shown in Table 4. However, not everyone was happy with the event. Some runners felt 'nickelled and dimed'.

Local satisfaction

The local satisfaction indicator is the residents' satisfaction level. Most of the runners judged local satisfaction based on the residents who lived near the campsite. The event director acknowledged that the residents who live adjacent to the campsite have complained in the past, but they respond immediately to any issue and added, 'we're overly communicative with the community letting them know about the event ahead of time'. Mostly the event director reported support from the locals. The locals we interviewed were more balanced in their perceptions (see Table 4).

Political/special agenda

A new indicator that emerged from the data was a notion of politics or special agendas that impacted the residents. Much of it was a local dispute over mining and/or tourism for resources (see Table 4). While it was clear the locals were incredibly upset about the addition of the mine, what came through is the effect that would have on the environment and tourism. Both locals' businesses thrive because of the environment, so the

addition of the mine and the risk associated with fracking was a threat to their business and events like Trailfest.

Economic elements

The economic elements surrounding the event were mentioned least of three WTO categories. This is not surprising as the perceived economic benefits might not be as obvious to participants, especially if they are staying and eating in the campgrounds. Economic elements are defined as those that ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are distributed fairly (WTO, 2004). There was originally one indicator (i.e. contribution to tourism), but economic development opportunities surrounding the event emerged as an additional indicator. This was defined as programmes or initiatives that could lead to economic impact for the location. It was clear after speaking with the locals that events like Trailfest offer visible economic benefits and provide opportunities for long-term growth and sustainability within the Kanab region (see Table 5).

Contributions of tourism

Contrary to the many risks to the local environment, participants from this study generally perceived positive economic opportunities to be gained through hosting the event. While the event organizer admitted that a great deal of the tourism dollars that could be spent on food and lodging were not spent in the town due to the event offering meals and camping as part of registration, he did note that at least 30% of the runners and event staff do not stay at the campground. Rather, they stay in the area, which helps to populate the hotels and generate business for the local community. Local companies were also

Table 5. Economic findings.

Economic indicator	Participant/ Document	Quote
Contributions of tourism to locals	Runner 1	Yeah, we don't know. We know that the Airbnb was happy to be able to rent us houses the first night. We know that the restaurant was happy to get us a seat and the revenue and everyone that asked us about a locally said, 'Oh, you're, you're here for the Grand Circle?' They were really happy.
	Local 2	You do see a percentage that extend their trip, and they kind of tend to fall into two categories, you know they're, they stay here and continue to use Kanab as a launchpad to explore other places, or they extend their trip but they go off somewhere else eastern Utah or Moab.
Economic development	Contractor	There were maybe two or three guides and now, I think there's over 20 different guides out here that are taking tourists to different areas because there's just so many things to do with ATVs and hikes and these types of things. So, it's obvious that tourism is very, very, very important to our economy out here.
	Local 2	The thing is, the folks making the policies are from the old school. So, their focus is like, ranching, mining, you know, the old standards that got us to this point. So, you've got those two schools. I mean, the obvious thing is that tourism is the backbone of our economy, and when you look at the restaurants and the hotels and these type of things, the growth here has not been because they're mining and the ranching is so good and all of that, you know, it's because of tourism.
	Runner 2	I look at the number of sponsors they have, and I see a lot of national sponsors, but I don't see a lot of local community sponsors.

contracted when possible to supplement the Trailfest experience including local catering companies to provide the daily meals, massage therapists, yoga instructors, local musicians and other local vendors. The event organizer noted that some supplies were still purchased from outside Kanab from box stores like Costco, but that there was still an effort to connect local businesses with the event. One of the local tour guides who was interviewed pointed out that an event like Trailfest certainly impacts some businesses more than others. He explained that he does not see extra tours booked, because the runners are quite busy during their stay; however, he also highlighted the perceived positive effect on local restaurants, hotels and grocery stores.

Economic development

An additional subtheme, economic development, emerged within the economic sustainability indicator, which captured that the event helped to sustain and stimulate business in the region. The local contractor shared his observations on the growth in tourism over the last couple of decades (see [Table 4](#)). This opportunity for tourism growth however is in large part due to access to the natural beauty of the surroundings. Local 2 mentioned a fear that he has for the commercialization of the area with industries that could conflict with the tourism industry (see [Table 5](#)). There is an emphasis on the delicate nature of this region and how policies and financially driven decision-making have the potential to disrupt the tourism industry.

Related to the Trailfest specifically, positives and negatives were observed in terms of ways to further improve business development in the region. Some runners noted a missed opportunity to infuse more dollars in the local community. One runner noticed the advertisements for local gear shops she had been directed to, meanwhile, another discussed a great bakery they stopped at every day on their way back after the races. Other opportunities mentioned included increased tourism to the area through extended stays. This was noted by the event director who claimed that many runners extend their stay to explore or return to the region to visit more parks. This was also observed by one of the locals who noted that many people pledged to move to the area upon retirement, with some already doing so.

Conclusions

The sport ecotourism industry is increasing exponentially as people search for untouched rural areas to participate in sport and events. This has led to the development of numerous sport events that bring hundreds or thousands of people to remote, fragile landscapes. From a research perspective, sport ecotourism, and more specifically *sport event* ecotourism, is a largely untapped area of investigation and one that may have a significant impact on tourism and the natural environment. Focusing on the sustainable indicators of ecotourism (Bulatović & Rajović, 2016; Mearns, 2010), this research study reinforced the literature on ecotourism more broadly and introduces novel insights into the sustainability indicators to measure sport event ecotourism's impact. The current study was a first known attempt to fill that gap by exploring the sport event ecotourism practices of 'vacation racing' on the United States National Parks using the WTO indicators as a framework. Furthermore, it was evident that new themes emerged to

assess the sustainability of the event by broadening the WTO indicators, which may provide useful strategies for other participant-driven sport ecotourism events.

Expansion of sport ecotourism research

According to scholars, the natural environment includes cultural, social, economic and environmental sustainability (Griessler & Littig, 2005; O'Brien & Chalip, 2007; Lozano-Oyola et al., 2012; Stoddard et al., 2012). Prior research in the sport context has largely focused on the environmental impacts like CO₂ emissions, strategies to mitigate negative impacts, or to educate sport consumers (e.g. Mair & Laing, 2013; Mallen & Chard, 2011; Trendafilova & McCullough, 2018; Wicker, 2018, 2019; Wicker et al., 2020). Given there is no consensus about how to quantify tourism sustainability, nor a universal methodology accepted (Torres-Delgado & Saarinen, 2014), the WTO indicators were used as a framework to highlight all three facets of the triple bottom line within the natural environment. While the use of the triple bottom line sustainability indicators and WTO indicators in research is not new, this study added to the literature by uncovering additional indicators for all three TBL areas. Additionally, an event that met the criteria for ecotourism was identified to explore this phenomenon in the context of sport event tourism (Blamey, 2001).

In the current study, the influence of the sport event on the natural environment and community was clear through the data and extended beyond the race weekend. The residents articulated how the increase in the number of events has amplified tourism to the area, as well as lengthened the tourism season to a point where there is no off-season (Carneiro et al., 2016). While beneficial from an economic standpoint, this could lead to negative environmental impacts as the lack of off-season for the natural setting may lead to damage to the local ecosystem (Bien, 06; Bulatović & Rajović, 2016). Alternatively, the lack of an off-season allows for businesses to increase their workforce and revenues so they can invest more into the local community; benefits also highlighted by residents.

Furthermore, the continued influence of education and social awareness is not limited to the event itself. Rather, several participants discussed how they would share what they learned during the event with people in their local community, as well as alter future behaviours (Mair & Laing, 2013). The evolution of environmental literacy being described by respondents is consistent with what environmental scholars believe to be the most challenging of literacy phases (Larson, Whiting, & Green, 2011; Ramdas & Mohamed, 2014). According to Price (2003), when stakeholders enter an operational phase, representative of ongoing assessment, critique and action towards building and sustaining environmental knowledge and skills, sustainable progress is more likely to be realized. Sport event ecotourism is providing vast experiences beyond merely building awareness of their surroundings. By affording regular interaction with the natural environment and educational presentations, events like Trailfest are cementing values of conservation, stewardship and responsible behaviour; behaviours that have found to be inversely related in those casually visiting public lands (Line et al., 2018). These outcomes differentiate sport event ecotourism from sport event tourism (Blamey, 2001; Singh et al., 2016), as well as general ecotourism.

WTO indicators

The second and third research questions for this study adds to the current literature by expanding the use of WTO indicators for highlighting sustainable and ecotourism practices. Many scholars are grappling with how best to measure sustainability indicators (see Torres-Delgado & Saarinen, 2014) and some studies have used the WTO indicators as a framework (Bulatović & Rajović, 2016). While not empirically tested in this study, the indicators provided useful guidance for interpreting the various sustainability themes within the data that are more consistent with research on the natural environment (Griessler & Littig, 2005; O'Brien & Chalip, 2007; Stoddard et al., 2012). The main indicators, and sub-dimensions, were all present in the interviews, participant observations, content analysis and visual ethnography. The richness of the different data collection techniques and subsequent analysis yielded four additional sub-dimensions: Education, Literacy, Political/Special Agendas, Economic Development. This aligned with Choi and Sirakaya (2006) who identified political and economic development indicators. However, there was limited indication of literacy or education indicators in the sustainability literature (see Mair & Laing, 2013), as there is in the environmental tourism research (see Lee et al., 2013; Ramdas & Mohamed, 2014). If the indicators are to be useful when evaluating impacts of ecotourism, then the addition of these categories would prove beneficial to providing a full analysis of the event's influence within the host community.

Education reflected the new knowledge gained regarding environmental strategies and cultural elements through participation in the event. Some learning opportunities were a part of the event design (e.g. presentations by *Leave No Trace* and local tribes) while others were through their participation in the event and after parties (e.g. learning what is compostable or recyclable). Literacy was defined as the pre-event knowledge by the participants in their evaluation of the event. Given the context of the study, it is not surprising individuals who participated in these events were more environmentally conscious (Davies et al., 2019; Larson et al., 2011), and more critical of things the event was not doing (e.g. monitoring the course, reusable items). Furthermore, this theme is important to our understanding of the impact of ecotourism as prior research has argued education is an important component of ecotourism (Blamey, 2001).

The political and social agenda theme reflected those who were using the natural environment for political gain or improved social standing. These new themes illuminate the use of natural resources for political and social gain from those who are in positions of authority or want to be. It is clear this location of the event is expanding tourism as an effort to increase the economic gains in the community, which leads to the last theme. Economic development centred on the creation of new economic streams indirectly related to the event (e.g. more people moving to the area, extended tourism season). The economic development is different than the traditional view of economic impact as it centres around creating the infrastructure or using the event to attract people to the destination on a continual and extended basis. The latter could be through the relocation or revisiting behaviours.

Practical implications

Sport event ecotourism events can learn from the strategies employed by Vacation Races. There are several suggestions that could incorporate into their events based on the findings

of this study. First, providing education about sustainable practices and how attendees may continue and pass along to others post-event is a critical element to sustainable practices (Larson et al., 2011; Mair & Laing, 2013). Second, composting porta-johns could also be utilized by mass participatory events to reduce the amount of chemicals and waste created from the traditional style facilities. Third, focusing on waste management strategies for composting, recycling and landfill to deflect the amount of waste created from these events (Mallen, Adams, Stevens, & Thompson, 2010). Fourth, engaging vendors in sustainable practices improves the overall effect. Fifth, developing relationships with local businesses to encourage economic benefits for local community and assist with the event's implementation. Disseminating information about local activities and restaurants so the participants can engage more with the local community businesses as well. Sixth, developing shuttle or carpooling systems to allow more participants to minimize car-related pollution. Invest monies in a carbon off-setting programme to combat the number of carbon-emissions created by the participants at the event (Wicker, 2018, 2019). Finally, limit the use of pre-packaged food and drink to minimize waste.

Limitations and future research

This study is not without its limitations. A qualitative design is limited in nature and was used here to explore whether the WTO indicators were a strong framework for better understanding the sustainable impact of mass participation events. Future research should examine perceptions using a quantitative approach. Scale development based on the sustainable indicators (Choi & Sirakaya, 2006; Lozano-Oyola et al., 2012; Kristjánsdóttir et al., 2018; Torres-Delgado & Saarinen, 2014) and ecotourism elements (Blamey, 2001; Buckley, 1994; Lee et al., 2013) may allow for greater generalizability of the research in this area. This current study did not measure economic, socio-cultural, or environmental impacts of this event. Examining the actual impacts of sport event ecotourism practices and subsequent attendee behaviour is critical for future research. Future studies could also examine the long-term environmental, social and economic sustainability, education, and conservation efforts within the region using a longitudinal approach. Researchers could compare nature-based sport events' impact on the environment versus sport event ecotourism. This could include a comparison of tourism and ecotourism related to general sport participation as compared to sport event participation to build a stronger understanding of how sport tourists interact with the natural environment.

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