

Sustainability in Single-Destination Music Festivals:

Burning Man and Bonnaroo

by

Nikhita Sheller

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Approved November 2022 by the
Graduate Supervisory Committee:

Kay Norton, Chair
Fernanda Navarro
Bliss Little

ARIZONA STATE UNIVERSITY

December 2022

ABSTRACT

Anglophone music festivals in the U.S. can be traced back to singing schools of the 1700s, which eventually blossomed into regular, outdoor musical performances, growing in popularity between 1840 and 1875. The first annual music festival in the United States was founded in Massachusetts in 1858. Modern single-destination music festivals grew in popularity in the United Kingdom and the United States during the late twentieth century. Although the Woodstock Music and Arts Fair of 1969 was not executed perfectly, it was an iconic event with a lasting cultural impact. Modern music festivals are modeled on the rural open-air festivals of the 1970s. In the past sixty years, the music industry has had to reconcile with the environmental impact of single-destination music festivals. Capitalistic ventures are inherently at odds with the environment—even music streaming has a significant carbon footprint. Corporate entities have been known to make insincere efforts to address their environmental impact, a tactic known as “greenwashing.” Music festivals hosting thousands of attendees generate a large amount of human waste on top of the already significant carbon emissions associated with travel, transport of equipment, and production. Event organizers must take significant measures to appeal to modern-day environmentally-conscious audiences. Burning Man and Bonnaroo are two events that once stood out among other large, corporate festivals for being developed by independent organizers. The two festivals are hosted in two strikingly different environments for which the organizers have enacted unique sustainability standards. Burning Man celebrates radical individualism and self-

reliance in a dry Nevada lakebed desert. On the other hand, Bonnaroo, hosted on the humid, rolling grassland of Tennessee is branded as an environmentally responsible event. The organizers of both festivals have promoted sustainability in their respective efforts to mitigate the environmental byproducts of their events, producing varying results. Sustainable festival practices have been utilized at Bonnaroo since its inception, whereas many of the longstanding traditions of Burning Man are antithetical to sustainability. This case study explores the rise of these two festivals, the environmentally conscious values held by both, and how they have changed over time.

TABLE OF CONTENTS

	Page
CHAPTER	
1 INTRODUCTION	1
Music and the Environment	1
Music Festival History	7
Woodstock	11
Modern Music Festivals.....	15
2 BURNING MAN	18
Overview	18
Featured Activities	20
Art.....	21
Sound Installations.....	23
Fire.....	27
Environment	28
Black Rock City.....	30
Economics	33
Demographics	35
General Environmental Efforts	36
Targeted Sustainability Efforts.....	38
2007 Green Man: Before and After.....	39
Conclusions	44

CHAPTER	Page
3 BONNAROO MUSIC AND ARTS FESTIVAL	46
Overview	46
Featured Activities	48
Music	50
Environment	51
Economics	52
Demographics	54
General Environmental Efforts	55
Targeted Sustainability Efforts	58
2009 Bonnaroo Festival	63
Conclusions	70
4 CONCLUSION: BENEFITS AND THOUGHTS FOR THE FUTURE	72
REFERENCES	

CHAPTER 1

INTRODUCTION

Music and the Environment

Popular music culture and the environment are inherently connected. Since the 1960s, the people participating in and facilitating pop music have been concerned with ideas of environmentalism and “going green.”¹ Judith Mair and Jennifer Laing define “greening” as the music industry practice of “investment in environmentally friendly facilities and practices.”² The World Commission on Environment and Development defines sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their needs.”³ As promoted and practiced by the United Nations, sustainable development is a principle for meeting goals in societal development while sustaining the natural systems and resources that support human progress. The concept of sustainable development presents many conflicts with cultural values, both societal and ethical. Sustainability scholar Armin Grunwalk outlines that sustainable development “. . . demands that the stock of capital which exists within a

¹ Matt Brennan, Jo Collinson Scott, Angela Connelly, and Gemma Lawrence. “Do Music Festival Communities Address Environmental Sustainability and How? A Scottish Case Study.” *Popular Music* 38, no. 2 (2019): 252.

² Judith Mair and Jennifer Laing, “The Greening of Music Festivals: Motivations, Barriers and Outcomes. Applying the Mair and Jago Model,” *Journal of Sustainable Tourism* 20, no. 5 (2012), 683.

³ Christa Thomsen, “Sustainability (World Commission on Environment and Development Definition),” *Encyclopedia of Corporate Social Responsibility*, (Berlin and Heidelberg, Germany: Springer, 2013) https://doi.org/10.1007/978-3-642-28036-8_531

generation be handed down as undiminished as possible to future generations.”⁴ Capital is a broad term referring to the assets held valuable within a capitalistic economy. Ethical consumption is not possible under capitalism, as the ideals of capitalism prioritize economic progress over environmental progress.

A study by U.K. scholars Matt Brennan, Jo Collison Scott, Angela Connelley, and Gemma Lawrence called “Do Music Festival Communities Address Environmental Sustainability and How? A Scottish Case Study” analyzed the ways that popular music festival organizers consider environmental sustainability and subsequently greenwash their image. “Greenwashing” describes when a company or corporation uses the language and imagery of sustainability issues to appear as though they are being environmentally considerate without taking any significant action. Pop, rock, hip-hop, and country music consumers form the basis for the global industry.⁵ The music industry is a capitalistic venture, seeking to make a profit, and capitalistic development is inherently at odds with the environment. No music can be produced without environmental repercussions, whether it be sonic pollution, or harvesting shellac beetles to press vinyl. Kyle Devine, Associate Professor in the Department of Musicology at University of Oslo, states that the generation of carbon dioxide emissions has doubled during the music streaming era.

⁴ Oliver Parodi, Iganacio Ayestaran, and Gerhard Banse (eds.), “Sustainable Development: Relationships to Culture, Knowledge, and Ethics,” (KIT Scientific Publishing, Karlsruhe, 2011), 22, <https://www.ksp.kit.edu/site/books/e/10.5445/KSP/1000021734/>.

⁵ Brennan et al, “Do Music Festival Communities Address Environmental Sustainability,” 253.

Streaming music does not require the pressing of toxic petrochemicals like an LP would, but streaming services are powered by server farms that consume significant amounts of energy.⁶ Streaming devices, such as phones and laptops, contain batteries made with lithium, a non-renewable mineral, and many of these devices end up in landfills after they break or become obsolete. That being said, there are a few milestones in popular music that show improvement in the relationship between the industry and environmental sustainability.⁷

The Baltic Sea is a source of environmental contention for Europeans. Due to runoff from agricultural emissions, the sea faces eutrophication, an overabundance of nutrients, which causes algal bloom and poor water quality. In 2003, the conductor and director of the Berwald concert hall in Stockholm began the Baltic Sea Festival. This event raises awareness for the environmental issues of the Baltic Sea while hosting many traditional ensembles. The Baltic Sea Festival expanded from one city to four within five years, and includes seminars from experts discussing the issues of the Baltic Sea, and collaborations with the World Wildlife Fund.⁸ The subject matter of repertoire is not solely focused on water or traditional music repertoire, including works from classic and

⁶ Kyle Devine, "Decomposed: A Political Ecology of Music." *Popular Music* 34, no. 3 (2015): 367.

⁷ Institute for Energy Research, "The Environmental Impact of Lithium Batteries," 12 November 2020, <https://www.instituteforenergyresearch.org/renewable/the-environmental-impact-of-lithium-batteries/>.

⁸ Christian Holmqvist, "Music Goes Green," *Finnish Music Quarterly* no. 1 (2018): 18.

contemporary composers. Kaija Saariaho premiered her critically-acclaimed oratorio *La Passion de Simone* at the 2006 Baltic Sea Festival.⁹

As climate issues become more pressing and environmental awareness increases, many musical acts have attempted to offset the carbon emissions of their music, for better and for worse. For example, during their *Rush of Blood to the Head* (2002) era, Coldplay sought to offset their carbon emissions from the album and tour by planting ten thousand mango trees in India. Despite Coldplay's planting funds making it to southern India, there was little follow-through, and very little of the money actually reached the landowners responsible for growing the trees. As a result, few trees actually survived. The results of this campaign make it seem as though Coldplay prioritized their public reputation instead of making a sincere plan to offset emissions.¹⁰

Not all carbon offset attempts by musicians have been in vain. Adam Gardner of Guster, an alternative rock band, and his wife Laura Sullivan, an environmental community organizer, founded Reverb in 2004, a nonprofit that supports musicians in decreasing the environmental impact of their work. Reverb's main service is to manage the logistics of running an environmentally-conscious tour. This includes cutting out disposable utensils, choosing biodiesel over gasoline, composting, neutralizing emissions, using organic merchandise, sourcing food locally, and using rechargeable technology.

⁹ Holmqvist, "Music Goes Green," 21.

¹⁰ David Hall, "Coldplay Conundrum: How to Reduce the Risk of Failure for Environmental Projects," 10 July 2018, *The Conversation*, <https://theconversation.com/coldplay-conundrum-how-to-reduce-the-risk-of-failure-for-environmental-projects-99449>.

Additionally, Reverb sets up sustainably minded “eco-villages” for concert-goers to become more informed and involved in local environmental organizations and non-profits. Reverb has worked on over 250 artist tours, including those by Billie Eilish, Maroon 5, Phish, and Fleetwood Mac. The cost of their services varies per tour and can be supported through grants, charity auctions, and sponsorships.¹¹

On July 7, 2007, event organizer Kevin Wall and former Vice President Al Gore presented the “Live Earth” concert series to the world. While this event was not without serious problems, it signified a shift in how mega-events are mediated. Over one hundred artists performed across the globe as their concerts were broadcast live on television to millions of consumers through television.¹² The organizers intended the event to be carbon neutral on a global scale.¹³ The lineup consisted of musical artists who advocated for environmental policy change, and the organizers published a guideline for running a green event. Despite the environmental theme, none of the artists featured, such as The Dave Matthew Band, Red Hot Chili Peppers, and Rihanna, explicitly played music that had an environmental message, nor did the organizers make an effort to promote small-scale live music productions. Ironically, the Red Hot Chili Peppers boasted that they were attempting to perform on three continents in twenty-four hours, an excessive and wasteful

¹¹ Mark Pedelty, *Ecomusicology: Rock, Folk, and the Environment*, Philadelphia: Temple University Press, 2012, 31.

¹² David Green, “Live Earth: The Music and the Message,” 8 July 2007, *NPR*, <https://www.npr.org/2007/07/08/11813655/live-earth-the-music-and-the-message>.

¹³ Pedelty, *Ecomusicology: Rock, Folk, and the Environment*, 21.

endeavor that would generate a large carbon footprint.¹⁴ An encore concert was planned to take place in Mumbai the following year, but was cancelled due to terrorist attacks.¹⁵

In 2008, soft rock singer-songwriter Jack Johnson, created the All at Once network, an educational online hub for consumers to support nonprofit organizations in exchange for musical rewards. This project empowered listeners to connect to global and local campaigns, learn how to become a volunteer, and become informed on environmental issues. Partnering with 220 nonprofits concerned with sustainability. Johnson posted a minute-long video for each organization and donated a dollar for every view. Fans were rewarded with music downloads, including tracks that were exclusive to the website. The site was a massive success, resulting in over a million views of the website at its inception. As promised, Johnson donated over a million dollars to the nonprofit organizations partnered with All at Once.¹⁶

In 2021, English trip hop collective Massive Attack commissioned a major study of the live music industry. It partnered with climate scientists at the Tyndall Center for Climate Change at the University of Manchester, seeking to analyze the practices and emissions of the industry. This study examined the areas of live music with the greatest environmental footprint, including audience transportation, travel, music production, and venue emissions. The results of this study, in tandem with sustainably-minded

¹⁴ Debbie Elliot, “Live Earth, Spanning the Globe,” 7 July 2007, *NPR*, <https://www.npr.org/2007/07/07/11808193/live-earth-spanning-the-globe>.

¹⁵ Pedelty, *Ecomusicology: Rock, Folk, and the Environment*, 26.

¹⁶ Pedelty, *Ecomusicology: Rock, Folk, and the Environment*, 35.

organizations, help the collective work to promote sustainable music consumption practices. Massive Attack members Robert “3D” Del Naja, Drian “Tricky” Thaws, Andrew “Mushroom” Vowles, and Grant “Daddy G” Marshall call for government intervention to create sustainable transport and venues, and recommends that artists include the cost of public transport in ticket prices and pack less equipment when touring.¹⁷

Music Festival History

Music festivals advance musical creativity and are a cultural staple for locals and tourists alike around the globe. According to authors Dee Bailey and Nathan Platte, the modern-day United States music festival can be traced back to colonial singing-schools of the 18th century. These schools, active between 1720 and 1840, were developed for churches to help improve musical literacy, educating churchgoers and community members alike.¹⁸ From these schools grew a tradition of formal outdoor concerts, wherein participants studied and practiced with musical masters for a period of time before the culminating event, a formal concert performance. Between 1840 and 1875, these outdoor concerts grew in duration and size, hosting not only musicians but the wider community as well. The first annual music festival, the Worcester (Massachusetts) Music Festival,

¹⁷ Jazz Monroe, “Massive Attack Launch Major Study of Music Industry Carbon Emissions,” 28 November 2019, *Pitchfork*, <https://pitchfork.com/news/massive-attack-launch-major-study-of-music-industry-carbon-emissions/>.

¹⁸ Bailey Dee and Nathan Platte, “Festivals,” *Grove Music Online*, 26 November 2013.

was founded in 1858.¹⁹ This event began as a singing convention that later grew to host more formal concerts in its lineup. Other early festivals that originated from the singing-school tradition include the Messiah Festival (1881-present, Lindsborg, Kansas), the Big Singing Day (1884-present, Benton, Kentucky), and the Bethlehem Bach Festival (1900-present, Bethlehem, Pennsylvania).²⁰

In the 20th century, outdoor musical festivals grew in popularity, as summer music festivals were developed through school programs in order to create audiences for their students and increase enrollment. These summer camp festivals made music more accessible for rural communities, bringing high-quality education to areas that previously had little opportunity to experience live music, and normalizing music festivals in the United States.²¹

Many of the longstanding modern music festivals in the West have grown from grassroots movements to commercialized spectacles. British rock and pop festivals, such as Reading Festival, Glastonbury Festival of Contemporary Performing Arts, and Isle of Wight Festival, have flourished since the early 1970s, serving as inspiration for U.S. music festivals. Chris Anderton notes that these open-air music festivals share a preference for green, rural spaces to accommodate on-site camping.²² In the United

¹⁹ Bailey, “Festivals.”

²⁰ “About the Choir,” The Bach Choir of Bethlehem, accessed 21 April 2022, <https://bach.org/season/about/>.

²¹ Dee, “Festivals.”

²² Chris Anderton, “Commercializing the Carnavalesque: the V Festival and Image/Risk Management,” *Event Management* 12, no. 1 (2009), 148.

States, music festival culture rose from the mud of Woodstock in 1969, a poorly-planned event with memorable musical performances, but disastrous environmental byproduct standards. Single-destination music festivals in the United States fell out of style in the 1980s in favor of stadium shows, but were reignited in the 1990s by relatively long-standing music festivals in the United Kingdom, like Glastonbury, an Irish festival that has grown from a humble 1500 attendees into one of the largest music and arts festivals in the world, hosting nearly 200,000 people cumulatively as of 2014.²³ Similarly, Burning Man, hosted in the Black Rock Desert of Nevada, began in 1986 as a small gathering in San Francisco and now hosts over 80,000 people every year.²⁴ While this festival features art, performance, rituals, and other community-building activities based in counter culture, it is also a celebration of American excess. Burning Man is a week-long event held at the end of the summer every year (excluding 2020 and 2021 due to the pandemic) centered around performance and ritual, maintaining its founding principles while adapting to accommodate a larger audience.²⁵ Built upon community grassroots efforts, the organizers of Burning Man have maintained simple and effective organization strategies despite the festival's massive growth spurt.²⁶

²³ Jenny Flinn, and Matt Frew, "Glastonbury: Managing the Mystification of Festivity," *Leisure Studies* 33, no. 4 (2014): 421.

²⁴ Katherine K Chen, "The Archaeology of Burning Man: The Rise and Fall of Black Rock City," Carolyn L. White (eds), Albuquerque: University of New Mexico Press, 2020, Cloth. ISBN *Journal of Anthropological Research* 77, no. 3 (2021): 430.

²⁵ Chen, "The Archaeology of Burning Man: The Rise and Fall of Black Rock City," 1.

²⁶ Rachel Bowditch, *On the Edge of Utopia: Performance and Ritual at Burning Man*, London; 2010, 56.

While each country has its own unique culture and history surrounding music festivals, today most anglophone countries share one significant downside- the generation of a large environmental footprint. Music festivals impact the local environments in which they are hosted through the generation of waste, and water and noise pollution, as well as the deterioration of vegetation, wildlife habitats, ecosystems, and the life cycles of individual organisms.

Festival organizers accommodate thousands of attendees for a week or so at a time, and these temporary venues often lack permanent power sources, so generators and other gasoline-reliant devices are imported from outside the venue to power the event. In light of the ever-more-dramatic climate disasters in the twenty-first century, festival organizers have had to account for a more eco-conscious audience than in previous decades, and thus, have had to adopt sustainable practices. While some producer efforts are sincerely sustainable, other seemingly eco-friendly strategies are misleading and amount to nothing more than greenwashing. One festival that made strides in sustainability long before it became popular was the Bonnaroo Music and Arts Festival in Manchester, Tennessee. Since the festival's beginning in 2002, Bonnaroo's organizers have stated their goal of producing "zero waste," or essentially offsetting the waste they create, through sustainable practices around energy and waste management, and community outreach.

Through these case studies, I will explore how the commodified environments of both Bonnaroo Music and Arts Festival and Burning Man impact the community and economy surrounding the event. In order to contextualize my analysis of these two

festivals, I will first explore the rise of single-destination music festivals in the United States.

Woodstock

Despite myriad practical issues, the Woodstock Music and Arts Fair of 1969 was a historic gathering of many popular musicians of the time over the course of four days.²⁷ Woodstock was a culmination of both popular and counterculture, drawing thousands of attendees to the festival site. In the late 1950s and early 1960s, the industrial boom that accompanied World War II reinvigorated the American economy and made travel accessible for more people.²⁸ Unfortunately, post-war peace was short-lived, and the 1960s saw civil unrest over the Vietnam War and the emerging Civil Rights Movement. Young Americans desired to expand and redefine their lives in an anti-authoritarian counterculture typified by sexual freedom, illicit drug use, and music. Woodstock 1969 arose out of the counterculture as a launchpad for iconic musicians who had yet to gain notoriety. Its organizers hoped to feature popular artists of the time, such as the Grateful Dead, Joan Baez, and Janis Joplin. When communicating with famed West Coast manager and promoter Bill Graham, the Grateful Dead members specified that they should be excluded from playing at Woodstock unless Carlos Santana was guaranteed a

²⁷ David Gates, “Twenty-Five Years Later, We’re Still Living in Woodstock Nation: Values Symbolized by the Woodstock Festival Still Pervade Society; Includes Profiles of People Who Were at Woodstock in 1969,” *Newsweek* 124, no. 6 (1994): 38.

²⁸ Kevin Hillstrom, and Laurie Collier Hillstrom, *Woodstock*, (Detroit: Omnigraphics, 2021), accessed November 2, 2021, ProQuest Ebook Central, 8.

spot in the event.²⁹ Santana, who had yet to release his first studio album, performed on day two of the festival and mesmerized the crowd with his Latin-influenced rock and roll.

This iconic event was organized by one of the country's top concert promoters of the time, Michael Lang, and record executive Artie Kornfield. The two teamed up with John Roberts and Joel Rosenman, two wealthy young men looking to invest in new and unusual business ventures. Roberts contributed nearly \$500,000 of initial funding, approximately \$3.8 million in today's dollars, towards the project. Lang's experience in concert promotion, combined with considerable financing allowed the organizers to secure big acts such as Jimi Hendrix, the Who, and the Creedence Clearwater Revival for the event while building notoriety.³⁰

The issues with Woodstock 1969 began when the promoters tried to secure a venue for the event. Originally, Lang had hoped to host the event in the small town of Woodstock, New York, a place that attracted many artists and musicians. However, the promoters struggled for approval from multiple sites for several months before they were able to secure a venue in Bethel, New York. Even after securing the site, organizers had to fight against backlash from town locals who disapproved of the festival. On July 21, 1969, only a few weeks before the event was scheduled, Woodstock finally had all the necessary permits to move forward.

²⁹ Hillstrom, *Woodstock*, 61.

³⁰ Hillstrom, *Woodstock*, 40.

By the first week of August, promoters had sold over 120,000 tickets and expected a crowd of at least 200,000. Despite the festival being scheduled for Friday, August 15 through Sunday, August 17, the first wave of concertgoers arrived the Monday prior to the event. Camping was not scheduled to begin until August 13; however, by that point, 60,000 attendees had arrived. To further complicate things, the New York State Police Department reneged on their agreement to direct traffic for the event, leaving the roads surrounding the farm paralyzed with traffic.³¹ Musical acts had to be delayed as artists were caught in traffic, which prompted promoters to transport some artists via helicopter. Over 400,000 people swarmed the dairy farm in Bethel for four days.³² When the first huge wave of fans arrived before the gates were ready to open, the organizers were overwhelmed; there had been insufficient time to complete their fences, gates, and their ticket-for-entry system. Due to these unfavorable circumstances, the organizers of Woodstock had to make the decision to declare the festival free, or potentially face an angry mob. Roberts reportedly said that he would rather prioritize the functionality of the festival over making a profit.³³

Woodstock offered a bewildering blend of liberation and chaos for concertgoers. The three days of peace, love, and music took their toll on the farmland as conditions steadily declined. Sanitation stations and food vendors were not equipped to handle the

³¹ Hillstrom, 60.

³² Jesse Jarnow, "Woodstock Music and Arts Fair (Woodstock)," *Grove Music Online*, 31 Jan. 31, 2014; Accessed Oct. 30 2021.

³³ Hillstrom, 50.

massive crowd at Woodstock. Heavy rains and intense heat struck the venue, turning the grounds into a mud pit of human waste and sweat. Due to the widespread use of psychedelics and other drugs, the medical facility was overwhelmed with people experiencing “bad trips.”³⁴ The New York governor at the time, Nelson Rockefeller, was so perturbed by the reports of deterioration and chaos at Woodstock that he threatened to send the National Guard to clear the farm.³⁵ In spite of these disastrous results, the infamy of Woodstock would live on, not only in the hearts of the attendees, but also of those who experienced Woodstock through documentaries, recordings, and myths. Some artists, like Santana, made waves during their Woodstock debut. Other artists were not as happy with their performance for example, the Grateful Dead reported that their instruments shocked them while they played, resulting in a poor performance; for example, guitarist Bob Weir stated that “[s]ome people made their careers at Woodstock, but we’ve spent about twenty years making up for it.”³⁶ Despite its flaws, Woodstock was ultimately a memorable manifestation of counterculture in an era of unrest. Music festivals that followed have built on the political subtexts of counterculture over time.³⁷

³⁴ Becki Robins, “Messed Up Things at Woodstock,” *Grunge*, May 17, 2018, <https://www.grunge.com/123016/messed-up-things-woodstock/>.

³⁵ Hillstrom, *Woodstock*, 71.

³⁶ Hillstrom, *Woodstock*, 63.

³⁷ Joanne Cummings, “The Greening of the Music Festival Scene: An Exploration of Sustainable Practices and Their Influence on Youth Culture,” in *Festivalization of Culture*, edited by Jodie Taylor and Andy Bennet, (London: Routledge, 2016), 194.

Modern Music Festivals

Modern U.S. music festivals offer concert goers experiences that transcend daily life, often creating atmospheres that promote community and social change. Typically, various forms of performance art, vendors, spirits, retail merchandise, games, rides, alternative therapies, workshops, children’s activities, community engagement opportunities, and more are showcased at a music festival. Events can range from a span of a few days to a few months. Festival goers still consume loud music, use illicit substances casually, and are generally more accepting of public nudity.³⁸ The ephemeral, temporary nature of festival spaces allow people to explore new identities and practices that align with counterculture.

Disposal of human and other waste generated at music festivals is a global issue. Music festivals in the United Kingdom generate approximately 23,500 tons of waste each year.³⁹ At the most recent Glastonbury Music Festival, organizers fenced off a stream to deter attendees from urinating in the local water and contaminating it with ammonia.⁴⁰ Excess and waste isn’t limited to western music festivals. Diwali is a multi-day Hindu festival celebrated annually throughout India and other countries, the celebrations of

³⁸ Madeline Rahme, “More Than Music: The Lived Experiences of Communities Developed Through Music Festivals,” MA diss., University of Denver, 2020, ProQuest Dissertations & Theses Global (2443654175), accessed 5 November 2021, 16.

³⁹ Richard Gray, “The People Fighting the War on Waste at Music Festivals,” *BBC Culture*, 27 June 2019, 2.

⁴⁰ Chiara Giordan, “Drugs in Urine from Glastonbury Festival ‘Pose Threat to Rare Eels,” *The Independent*, 28 September 2021. Glastonbury has been hosted in Wiltshire, United Kingdom since 1970.

which often include fireworks displays and firecrackers. In Mumbai's 2022 festival alone, these celebrations caused the daily waste of the city to increase by fifteen to twenty percent, a portion of which is created by firecrackers.⁴¹ While an in-depth discussion of the unsustainability of festivals outside the U.S. warranted, it is beyond the scope of this paper.

In response to the growing public awareness of climate change, the music festival industry has responded by supposedly staging "green" and carbon neutral events. Upon further inspection of these practices, Chris Gibson and C. Wong stated that, while festivals make environmental claims, the very environment they seek to protect is threatened by hundreds of people dancing, living, and performing in a small area for several days.⁴²

Touring musical acts have also been known to make insincere environmental efforts over the years in order to appeal to eco-conscious audiences. The band U2 received heavy criticism for their excessive 360° tour (2009-2011), which featured an estimated 220 semi-trucks hauling their stage and gear all across Europe.⁴³ As ecomusicologist Mark Pedelty states, pop spectacle, the act of performance

⁴¹ Shefali Parab-Pandit, "Mumbai Generates 15-20% More Festival Waste," *The Free Press Journal*, 5 November 2022, <https://www.freepressjournal.in/mumbai/mumbai-generates-15-20-more-festival-waste>.

⁴² Chris Gibson and C. Wong, "Greening Rural Festivals: Ecology, Sustainability, and Human-Nature Relations," in *Festival Places: Revitalizing Rural Australia*, Chris Gibson and John Connell, (Bristol: Channel View, 2011), 93.

⁴³ Mark Pedelty, *Ecomusicology: Rock, Folk, and the Environment*, (Philadelphia: Temple University Press, 2012), 3.

entertainment, “is at odds with the environment.” As an alternative, he proposes a movement toward local and participatory music, which is not without its own carbon footprint.⁴⁴ In this paper, I will be examining the ways in which the organizers of the Burning Man festival in Nevada and the Bonnaroo Music and Arts Festival in Tennessee have addressed and promoted sustainability in their event management.

⁴⁴ Pedelty, *Ecomusicology: Rock, Folk, and the Environment*, 4.

CHAPTER 2

BURNING MAN

Overview

Burning Man is a destination festival centered around promoting self-sufficiency and expression through art, music, and theatrical performance that takes place for eight days at the end of August and the beginning of September. What was originally a gathering of a few dozen participants grew into an annual event hosting tens of thousands of fans.⁴⁵ The event began in 1986 on the northern end of Baker Beach in San Francisco, as a modest gathering dedicated to erecting and burning an effigy in the shape of a man.⁴⁶ By 1991, the event had grown so popular that it became too large for the beach, and the festival was moved to the Black Rock Desert of Nevada, 100 miles north of Reno. This area encompasses a thousand square miles of dry lake bed, or playa.⁴⁷ The harsh environmental conditions make Black Rock Desert an unlikely site for a festival, but that hasn't stopped the event from growing in size, attendance numbers, and notoriety through the years. Organization and infrastructure has been maintained and adapted to suit the needs of the city over time. In the span of a few weeks, a small city rises up in the desert, aptly named Black Rock City. Attendees arrive prepared to create, contribute to, and

⁴⁵ Stephan Moore and Scott Smallwood, "Sound Art at Burning Man: Sonic Interventions in an Extreme Environment," *Revue Filigrane: Musique, Esthétique, Sciences, Société*, no. 18 (January 2015), 3.

⁴⁶ "Burning Man Timeline," Burning Man Project, accessed 4 October 2022, <https://burningman.org/timeline/1986/>

⁴⁷ Richard Elloyan, "Burning Man, Extreme Environmental Health," *Journal of Environmental Health* 74, no. 10 (June 2012), 14.

interact with artwork. This artwork is largely site-specific, incorporating themes of the event, such as “Green Man” or “American Dream,” alongside the unique environmental conditions of the Black Rock Desert.⁴⁸ In addition to art and music, other participatory festival activities include organized talks, classes, yoga and exercise sessions, competitions, and even academic conferences.⁴⁹ This cultural event has captured the attention of scholars from many fields, including anthropology, sociology, theology, ritual studies, and performance studies.⁵⁰

Hosting a gathering of tens of thousands of participants without the proper planning has the potential for disaster. Mass events like the Fyre Festival, a 2017 event advertised as a luxury getaway in the Bahamas, yet planned and implemented in only six to eight weeks, subsequently turned into a massive failure.⁵¹ What makes Burning Man stand out from other festivals is that it has been building on a long history of noncommercial, grassroots organization that persists to this day. Burning Man does not rely on the promise of a profit in order to function efficiently. In the following section, I discuss some of the key points of interest at Burning Man that draw in thousands of participants.

⁴⁸ “2008 Art Theme: American Dream,” Burning Man Project, accessed 8 October 2022, https://burningman.org/about/history/brc-history/event-archives/2008-2/08_theme/.

⁴⁹ Moore, “Sound Art at Burning Man,” 5.

⁵⁰ Rachel Bowditch, *Performance and Ritual at Burning Man* (London: Seagull Books, 2010), 2.

⁵¹ Baggs, Michael. “Fyre Festival: Inside the World’s Biggest Festival Flop,” *BBC News*, 18 January 2019, <https://www.bbc.com/news/newsbeat-46904445>.

Featured Activities

People planning to attend Burning Man must be prepared to sustain themselves with what they bring with them into the Black Rock Desert. The festival does not provide amenities that many other festivals provide, such as food, shelter, and potable water. The nearest grocery store is 100 miles away, so stocking up on supplies is necessary before entering the desert. Attendees are expected to experience intense heat and cold, high winds, and long-lasting alkali whiteouts. These extreme conditions give attendees a sense of “playing survival,” which I discuss further in the general environmental efforts section.

Due to the international attention Burning Man receives, the festival is now redefining the relationship between alternative and mainstream culture, and ultimately creating contradictions in the process. Similar to Tennessee’s Bonnaroo, Burning Man is a commercialized social environment that promotes the practice and performance of alternative lifestyles. The attendees subscribe to no one specific set of political, religious, or social ideals. Rather, over time, the festival has become steeped in several prevailing values focusing on immediacy and participation.

Burning Man is a venue for a broad array of art forms and activities. There are many opportunities for stimulation and activity on the playa. Some of these points of interest include but are not limited to large-scale art installations, mutant vehicles, explorable structures, interactive art, kites, inflatables, painting and other 2-D art, theater, performance, games, theme camps, spontaneous musical experiences, and of course, fire. The event culminates with the burning of a 40-foot tall wooden effigy of a man.⁵²

⁵² Bowditch, *On the Edge of Utopia*, 2.

Unlike other popular single-destination arts festivals like Bonnaroo, music is not the central focus at Burning Man. The organizers do not have central booking for the event; instead, they encourage “spontaneous musical experiences,” meaning that the music that attendees hear at the festival is dependent on the participants themselves.⁵³ Electronic music is especially prevalent at the festival. In 2018, electronic artists Flume, Zhu, Skrillex, Diplo, and Tokimonsta all performed on the playa of their own volition, surprising Burning Man attendees.⁵⁴ The absence of a paycheck does not deter critically-acclaimed artists from attending and performing at the festival.

Art

The themes of immediacy and participation of Burning Man are embodied through immersive art installations that encourage participants to touch, interact with, and exist alongside larger-than-life works of art. The works featured on the playa take the form of interactive art installations, sculpture, shelters, kites, inflatables, painting, performance, games, theme camps, art cars, and fire- many of which only come to life when participants interact with them. The interaction then becomes a performance.⁵⁵ Some works explicitly invite this type of engagement. Other works take the form of

⁵³ “General: Music/DJs: What is This Year’s lineup? Help and F.A.Q.,” Burning Man Project, accessed 5 October 2022, <https://help.burningman.org/hc/en-us/articles/360024793951-General-Music-DJs-What-is-this-year-s-lineup->.

⁵⁴ Alya Khan, “Diplo, Skrillex, Zhu, and More Heated Up the Playa,” 5 September 2018, EDM.com, <https://edm.com/news/djs-at-burning-man>.

⁵⁵ Moore, “Sound Art at Burning Man” 4.

sounding devices that respond to the whole environment. Additionally, instrument designers, inventors, and other experimental musicians bring their instruments to the event and perform. Immediacy is highly valued in the community; consequently, many of artists can register to have their piece burned at the end of the festival. However, there is limited availability due to the resources and environmental implications. Artists can apply for one of three “Open Fire” tiers—the first allows structures on the playa to burn on decomposed granite, the second is for fires in enclosed containers, and the third is for art that needs to be relocated to an approved platform to burn. The Burning Man Project defines “Open Fire” as a burning of a solid or unpressurized liquid fuel without external assistance or materials.⁵⁶

Artists and participants alike must carefully consider and prepare for their needs. Artworks requiring power use gas-powered generators, solar power, or wind-generated power. When planning artworks and transporting them to the playa, artists need to be prepared for the likelihood of high winds, dust storms, extreme heat, and the occasional rainstorm. Electronics are especially sensitive to extreme heat and dust. The earth is dry and brittle, making it hard to drive stakes into the ground and stabilize structures. The sturdiness and safety of the artwork is crucial, since festivalgoers will not hesitate to interact with the art, day and night. To prevent accidents and damage, artwork is illuminated at night. Since fire is an important theme for the festival, much of the artwork

⁵⁶ “Open Fire Guidelines,” Burning Man Project, accessed 10 November 2022, <https://burningman.org/event/participate/art-performance/playa-art/art-installation-guidelines/fire-art-guidelines/open-fire-guidelines/>.

is designed to incorporate flames or to burn completely.⁵⁷ These factors can both limit and inspire Burning Man artists, challenging them to innovate around obstacles in creative ways.

Sound Installations

In surveying the sound art installations between 2000 and 2019, I found that many were designed to feature bells, repurposed instruments, wind harps, chimes, amplified sound, and electronics. While there were far fewer sound art installations in the early 2000s, they have since become much more common at Burning Man as audio technology becomes more accessible. Many of the artists use the environment of the playa to their advantage when designing sound installations; they have displayed interactive wind sculptures, electronic installations with audio, touch-sensitive sound art, musical steam-powered ceramic sculptures, and art cars with performance stages in their trunks. A significant number of sound installations through the years have been based on Aeolian harps, which rely on the windy conditions of the playa to make sound.

A survey of the festival's Installation Archives reveals that the vast majority of works featured at the event were created by men. Very few of the artists are people of color (POC), and the majority of installations lead by women POC were sponsored by BMO off-site, thus were not actually featured on the playa. However, anyone can bring their art to the event as long as they are able to haul it in and out.

⁵⁷ Moore, "Sound Art at Burning Man," 4.

Prav Pillay was one of the few POC sound installation artists featured onsite in the early 2000s. His piece “Windsutra,” a 100-foot-wide Aeolian organ structure, was featured on the playa during Burning Man 2001. The large-scale installation featured hollowed out wind flutes, driven like stakes into the ground in a concentric circle, surrounding an elevated area holding six hammocks. The piece was designed only to “sing” during sandstorm conditions, when winds exceeded thirty-seven miles per hour. Six participants could lie safely in the hammocks suspended within the heart of the structure and listen to the storm. At night, the structure was illuminated with simple paper lanterns.⁵⁸ Through his work, Pillay seeks to negotiate an “uneasy” dialogue between conflicting worldviews in the age of the Anthropocene as technology rapidly develops and environmental conditions become increasingly unbalanced. His multi-disciplinary, collaborative work explores and integrates ideas from the disciplines of ecology, biology, psychology, sociology, organizational development, anthropology, semiotics, computer science, and computer engineering. Currently, his studio focuses on site-specific community-based installations and ceremonial public artworks, which explore issues of place, culture, ecology, and spatio-temporal recognition. On his website, Pillay describes himself as leading, developing, and coaching “high-performance” teams in private, for-profit, and non-profit sectors, a statement that suggests that Pillay may have once worked on collaborative teams, but now is primarily engaged as a designer and delegator of

⁵⁸ “2001 Wind Sutra,” Prav Pillay, accessed 8 September 2022, <https://www.pravpillay.net/pages/2001-wind-sutra>.

labor.⁵⁹ He is listed as the artist and co-producer of “Windsutra,” but his co-producers are unnamed in all documentation.⁶⁰ Again upholding Burning Man’s ideal of immediacy,, there is little photographic evidence of the installation and no documentation of the set-up. In recent years, Pulay has served as the Artist and Community Strategist at the charity entitled R.A.V.E.N. (Respecting Aboriginal Values and Environmental Needs).⁶¹ Burning Man’s representation of women and POC artists on the playa has increased slightly. Whereas women represented roughly one in twenty artists back in the early 2000s, they now make up roughly one out of every three artists in recent years (as of 2019).⁶²

Kiori Kawai is a Japanese installation artist, dance performer, dance choreographer, and an educator whose work was featured at the 2013 Burning Man. Her art installation *Mizaru* contemplates the thin, inescapable border between life and death. *Mizaru* is the name of one of the three wise monkeys (Mizaru, Kikzaru, and Iwazaru) in Japanese culture. The literal translation of the name “Mizaru” is “not to see.” The piece is a large transparent box that, when entered, presents the audience with a white wall. The wall itself is a piece of spandex stretched over a large frame. It represents the barrier between life and death. The spandex acts as a touch-sensitive membrane so that people can push the wall to manipulate the visuals and sounds, based on the depth of their touch.

⁵⁹ “Approach to Art,” Prav Pillay, accessed 8 September 2022, <https://www.pravpillay.net/pages/approach-to-art>.

⁶⁰ “Art Installations Archive, “ accessed 22 September 2022, Burning Man Project, <https://burningman.org/about/history/art-history/archive/>.

⁶¹ Prav Pillay, “Approach to Art,”

⁶² “Art Installations Archive,” Burning Man Project.

The installation employs five unique combinations of visuals and noises. Outside of the structure, the projection can be seen on all sides. This piece has been featured as a standalone installation and in tandem with a dancer.⁶³ Kawai and her husband Aaron Sherwood, a composer and new media artist, are the founders of Purring Tiger, a multicultural, multimedia, interactive installation and performance group.⁶⁴ Many of their works are created in collaboration with local and international dancers, musicians, and media artists.

“Got Framed,” by Puerto-Rican interactive installation artist and graphic designer NiNo Alicea was featured at the 2015 Burning Man Festival. This piece is a large-scale photograph frame (roughly twenty by eleven feet) with solar-powered, touch-sensitive pads that activate sound and lighting, and playground-style monkey bars, which encourage the audience to make contact with and become a part of the piece. In contrast to other Burning Man artworks, participants are encouraged to take photos with it. Dedicated to his abuela, “Got Framed” established Alicea as the first Puerto Rican artist to be featured at Burning Man. Alicea has also received two Honoraria Art Grants from the Burning Man organization, one in 2017 and one in 2022. He has been the Art Director and Prop Master for singer Ricky Martin since 2017. In examination of the social media accounts affiliated with “Got Framed,” Alicea refers to a “crew,” later named the Parliament Art Crew at the next year’s festival. The crew includes the roles of Creator,

⁶³ “MIZARU- Installation/Performance,” Purring Tiger Collective, accessed 22 September 2022, <http://www.purringt.com/#/mizaru/>.

⁶⁴ “About,” Kiori Kawai, accessed 8 September 2022, <http://kiorikawai.com/>.

Lead Builder, Second Lead Builder, two Architects, Project Engineer, Project Manager, Project Coordinator, Lighting Engineer, Electrician, Crew Manager, Materials Lead, and other positions.⁶⁵

Fire

Fire has long been a fascination for humans, and at Burning Man, it is the central element upon which art and performance is reconceptualized. In some contexts, fire is seen as a symbol of vitality, evoking passion, desire, and warmth. In others, fire represents destruction, suffering, and unpredictability. A constant among many eras and cultures is the connection between fire and ritual, which can be traced back to Paleolithic hunting and cooking rituals.⁶⁶ Fire thus calls to humans from the depths of history. To connect with others through fire rituals is a primal practice that is perpetuated and transformed at Burning Man as attendees abandon the comforts of modern daily life and try their hand at “survival” on the playa. Like the legend of the phoenix, attendees seek to burn away the old to make way for the new; many of the works of art featured at Burning Man are designed to be destroyed. In the early years of the festival, the shock factor of blazing artworks was especially memorable. The ephemeral nature of the art invited consumers to separate tangible physicality from ethereal meaning.

⁶⁵ “About,” Leave it to NiNo, accessed 8 September 2022, <https://www.leaveittonino.com/about>.

⁶⁶ Rachel Bowditch, “Phoenix Rising: The Culture of Fire at the Burning Man Festival.” *Performance Research: A Journal of the Performing Arts* 18 (1), 3.

The utilitarian and artistic use of fire is not without great risk, however. Fire has a considerable impact on the environment even when used safely, especially in the western United States where wildfires threaten human dwellings and smoke is a public health problem.⁶⁷ Performers, such as fire dancers and fire swallowers, assume personal risk when they perform, since a disruption in their concentration can result in burns on the body. To mitigate the controllable but unavoidable side effects of combustion, great care is taken by participants using fire.

Environment

The Black Desert playa, approximately 311 square miles, is the ancient lake bed of Lake Lahontan, a massive body of water that existed around 12,000 years ago. The ground is composed of fine alkali silts, making the surface of the playa extremely flat.⁶⁸ The organisms living in and around the playa are most lively during periods of flood. In the western United States, desert playas are subject to drought, aeolian forces (wind), and periodic flooding. Vast, open, desert environments like these attract tourists, military activity, festivals, and other events that disturb the delicate substrate of the lake bed, home to several orders of Branchiopoda, small crustaceans. These and other organisms living on and around the playa, including tadpole shrimp (Notostraca), fairy shrimp (Anostraca), smooth clam shrimp (Laevicaudata), and spiny clam shrimp and water fleas

⁶⁷ “Fire Effects on the Environment,” U.S. Forest Service, accessed 27 September 2022, <https://www.fs.usda.gov/pnw/page/fire-effects-environment>.

⁶⁸ Andrew J. Oliphant, Sam Stein, and Garrett Bradford, “Micrometeorology of an Ephemeral Desert City, the Burning Man Experiment,” *Urban Climate* 23 (2018), 54.

(Diplostraca) are most lively during periods of flood. In their life cycle, adults grow, reproduce and lay eggs during floods, or inundation. The eggs survive through periods of drought and in the next flood, incubate and hatch. During periods of inundation, the ecosystem of the playa consists of both producers (such as phyto-plankton and bacteria) and consumers (branchiopods). These organisms are a hearty food source for migrating birds.⁶⁹ In 2013, a group of biologists led by Donald W. Sada undertook a study of the branchiopod crustaceans in the playa and the effects of human recreational activity on their egg production. The biologists collected eighty-seven samples of the playa soil to record the number of branchiopoda eggs in Black Rock City before and after Burning Man Festival. They found that roughly “fifty percent fewer eggs of *B. mackini* occurred in camp areas following the Burning Man Festival, while the number occurring after the event was approximately 30 percent fewer in the roads.” Recreational activity clearly has a direct negative impact on the reproduction of these organisms. The study found that camping had the greatest negative impact on egg density in the playa.⁷⁰

In contrast to the needs of the crustaceans, rain is one of the greatest challenges for the organizers and attendees of Burning Man. Upon entry, festival-goers are prohibited from using cars and encouraged to use bikes.⁷¹ When the dry lake bed gets

⁶⁹ Donald W. Sada, Christopher Rosamond, and Kenneth D Adams, “Effects of Recreational Use on Branchiopod Egg and Ehipippia Density, Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area, Nevada, USA,” *Journal of Crustacean Biology* 33, no. 2 (2013), 288.

⁷⁰ Sada, Rosamon, and Adams, “Effects of Recreational Use on Branchiopod Egg and Ehipippia Density,” *Journal of Crustacean Biology* 33, no. 2 (2013), 290.

⁷¹ Richard Elloyan, “Burning Man, Extreme Environmental Health,” *Journal of Environmental Health* 74, no. 10 (2012): 14.

wet, its consistency becomes unsuitable for driving, biking, and even walking. This has only happened two times in the history of the festival, the first instance occurred in 2011 and left the post-event clean-up crew stranded on the playa for weeks.⁷²

Black Rock City

“Just as abruptly as it appears, with a lifespan of one very intense week, Black Rock City vanishes. An important coda to the festival is the total cleaning and restoration of the desert, erasing all evidence of the City’s evanescent presence.” Rachel Bowditch, *On the Edge of Utopia*, p. 2.

Unfortunately, the festival site is a city in both spirit and function, so there is substantial work required to return the site to its original condition. In addition to having its own zip code, the site features a small electrical grid, a public works department, a landing strip, peace officers, and various health, safety, and fire services. The official Burning Man organization supplies minimal infrastructure for this city, but does provide a street layout for traffic control and maintenance, as well as portable toilets.⁷³ On the playa, nine miles of orange construction mesh fence, approximately four feet high, outline a pentagonal shape that defines the outer edges of Black Rock City (BRC).⁷⁴ When over 50,000 people migrate to the playa for Burning Man, Black Rock City

⁷² Moore, “Sound Art at Burning Man,” 4.

⁷³ Moore, “Sound Art at Burning Man,” 4.

⁷⁴ Linda Susan Kreckler, “Art Installations in the Desert: A Participant Observation Study of the Art of Real Life Burning Man and Second Life Burn2,” PhD diss., Arizona State University, Tempe, 2014, 2.

becomes one of the largest cities in Nevada.⁷⁵ The city becomes packed with vehicles, tents, shades, domes, and other structures, which are separated by streets about ten meters wide. The process of laying out the city and its infrastructure begins a month before the event, employing the work of thousands of employees and volunteers. When the gates to BRC open to the public, the population surges by over 50,000 people, dispersed evenly throughout the residential area in designated camps, radially oriented around the center of the pentagon and covering roughly 2.9 square miles.⁷⁶

The Bureau of Land Management, a division of the Department of the Interior, manages the plot of land on which the city is situated.⁷⁷ In addition to the environmental health staff on-site, there are representatives from the state department of transportation, local Native American tribes, state highway patrol, the Federal Aviation Administration (which regulates flights at the temporary airport), the county sheriff's department, and the Sierra Pacific Railway. Lacking sanitation infrastructure beyond portable toilets, Black Rock City is vulnerable to a potential outbreak of foodborne illness or virus. By 1999, attendance at Burning Man had increased so significantly that the state health division of Nevada erected an office on-site for the duration of the event, which has been maintained to this day. This office provides permits for vendors, maintains porta-potties, and

⁷⁵ Richard Elloyan, "Burning Man, Extreme Environmental Health," *Journal of Environmental Health* 74, no. 10 (2012): 14.

⁷⁶ Oliphant, "Micrometeorology of an Ephemeral Desert City, the Burning Man Experiment," 54.

⁷⁷ Krecker, "Art Installations in the Desert," 2.

maintains contact with emergency medical services in the event. More than 500 porta-potties, each needing to be pumped several times a day, dot the playa. As many as twenty-five trucks, ranging from 250 gallon trucks to 5000 gallon tankers, may be operating at a given moment, hauling sewage 200 miles to a waste treatment facility in Reno. Such measures have been essential; the festival's population doubled during the mid to late 1990s and steadily increased into the 2000s before the Bureau intervened in 2019, enforcing an attendance cap of 80,000 people.⁷⁸

Although there are unavoidable negative environmental repercussions, the festival is a venue for group bonding among participants. Rachel Bowditch records how the rituals of Burning Man create meaning for its attendees, comparing the journey into the desert and festival site to that of a pilgrimage, "separated from everyday social life, temporarily becoming geographically and socially marginal."⁷⁹ This separation and marginalization from daily life could be a "situation of social uncertainty," as stated by Cross and Woodruff, in which music helps shape social relationships. Once inside, attendees become a part of an "experience economy," wherein immersion and interactivity are highly valued.⁸⁰

⁷⁸ "Burning Man Agrees to Attendance Cap But Continues to Fight Searches," Billboard, last modified 7 July 2019, <https://www.billboard.com/culture/events/burning-man-attendance-cap-no-searches-8518386/#!>.

⁷⁹ Bowditch, *On the Edge of Utopia*, 22.

⁸⁰ Bowditch, *On the Edge of Utopia*, 105.

The act of escaping from the conveniences of everyday life to a less-than-comfortable environment is described by Rachel Bowditch as “playing survival”-- “playing” because the people who can afford to take time off of work to camp out in the desert for a week are the very people who, because of their financial security, can otherwise afford to live comfortably. Thus the daily lives of attendees are far removed from the concept of true survival; ultimately, they are in full control of what they experience.

Economics

When the Burning Man Festival began gaining popularity and growing larger in the 1990s, the founders established a limited liability corporation, Black Rock LLC, to handle the finances and logistics of the event. In 2008, the founders began preparing to transition the LLC to a non-profit, creating the Burning Man Project (BMP).⁸¹ These plans were finalized in 2014 when the founders merged the board of the former LLC and the BMP to create an official non-profit organization by the same name.⁸² BMP consists of fifteen board members and roughly 896 employees.⁸³ In 2015, its total revenue was

⁸¹ Carly Schwartz, “Why Burning Man’s New Nonprofit Status Actually Matters,” *Huffington Post*, 4 March 2014, https://www.huffpost.com/entry/burning-man-nonprofit_n_4899405.

⁸² “Burning Man Transitions to Non-Profit Organization,” Burning Man Project, last modified 3 March 2014, <https://journal.burningman.org/2014/03/news/global-news/burning-man-transitions-to-non-profit-organization/>.

⁸³ Jenny Kane, “By the Numbers: How Much Burning Man Makes, Spends, and the Top Salaries,” *Reno Gazette Journal*, 17 December 2015, <https://www.rgj.com/story/life/arts/burning-man/2015/12/17/numbers-how-much-burning-man-makes-spends-and-top-salaries/77511952/>.

32.4 million dollars and their expenditures totaled 30 million dollars, meaning it recorded a net revenue of 2.4 million dollars. The highest salary goes to the CEO of the organization, Marian Goodell, who made \$232,538 in 2015. Founder Larry Harvey received the second highest salary at \$197,516.⁸⁴

The Burning Man LLC created several departments that were necessary to maintain the safety of the festival: the department of mutant vehicles (to inspect the safety of art cars); a pyrotechnics group dedicated to maintaining the safety of fires and other explosive events, a team of Black Rock rangers assisting law enforcement, a public works department that builds, maintains, and dismantles the city, and, most notably, the fire department. These separate entities coordinate through pre-festival and during-festival daily briefings, in addition to and post-festival meetings to determine the successes and shortcomings of the event. Discussion topics include the important matter of getting thousands of attendees out of the playa at the end of the festival, as well as potential for “preparing and transporting large numbers of individuals long distances in the event of mass casualties due to disease, fire, or natural disaster.”⁸⁵

Additionally, the BMP sponsors select artworks to be installed on the playa for the week of the event. Of the revenue obtained by the BMP in 2015, \$827,000, plus \$675,000 for installation and support, was awarded as honoraria grants to on-site artists. To support artists showing their work outside the festival, five members of the original

⁸⁴ Kane, “By the Numbers.”

⁸⁵ Richard Elloyan, “Burning Man, Extreme Environmental Health,” *Journal of Environmental Health* 74, no. 10 (2012): 14.

LLC formed the Black Rock Arts Foundation, a non-profit dedicated to the sponsorship of people whose art is displayed outside of mainstream markets, galleries, and museums. An additional \$217,836 of 2015 revenue went to the Black Rock Arts Foundation, which dispersed the funds to several off-site projects ⁸⁶

Tickets for Burning Man are available throughout the year in varying degrees of expense. As of 2022, main sale tickets were sold at \$575 and vehicle passes were \$140. Avid fans can purchase their tickets several months ahead of the main sale for \$1,500 to \$2,500 each.⁸⁷

Demographics:

Burning Man has historically been populated by a majority of white people, especially the artists featured in the first two decades of the festival. Since 2005, the BMP has generated an annual survey to collect socio-demographic information from willing participants. The information is used by the organization to meet the needs of the community and track the changes in population from year to year.⁸⁸ In 2015, the project expanded by producing an annual population analysis, including data related to before, after, and during the festival. This includes detailed socio-demographic data on age, race, residence, income, education, politics, gender, sexuality, and more. Between 2013 and

⁸⁶ Kane, "By the Numbers."

⁸⁷ "Black Rock City 2022 Ticket Information," Burning Man Project, accessed 9 November 2022, <https://tickets.burningman.org/>.

⁸⁸ "Census Archive," Burning Man Project, accessed 27 September 2022, <https://burningman.org/about/history/brc-history/census-data/>.

2019, the proportion of white people decreased from 83% to 76.4% of the Burning Man attendees.⁸⁹ The small representation of people of color at the event speaks to the social accessibility of the experience. While a deeper analysis of the demographics of Burning Man throughout its history would be helpful in understanding its social environment, such a project is beyond the scope of this paper.

General Environmental Efforts

When it's active, the city never sleeps, as it hosts thousands of participants operating on a twenty-four-hour schedule and generating significant amounts of waste each day. In 2013, the population of Black Rock City was 69,613, about 14,800 people per square km. Within the city there are three electrical grids, provided and maintained by the Black Rock City public works department. Festival-goers have limited access to power sources per the Burning Man principle of "radical self-reliance."⁹⁰ A 2013 survey from Black Rock City showed that 59 percent of attendees used "gasoline or diesel powered vehicles and/or generators" as their primary energy source in camping areas. The majority of attendees used propane or petroleum for cooking in 2013.⁹¹ In addition to the resources expended for travel, cooking, and other energy needs, and in line with the

⁸⁹ A.B Shev., D.L. DeVaul, D. Beaulieu-Prévost, S.M. Heller, and the 2019 Census Lab, "Black Rock City Census," accessed 27 September 2022, <http://blackrockcitycensus.org/sociodemo.html#ethnicity>.

⁹⁰ Moore, "Sound Art at Burning Man," 5.

⁹¹ Oliphant, "Micrometeorology of an Ephemeral Desert City, the Burning Man Experiment," 55.

fiery theme of the event, a great deal of wood, propane, and petroleum are burnt for the sake of art and spectacle. In the residential camps, burn barrels are interspersed to reduce “burnable waste,” but most of the burning occurs on the playa.

Vehicles are mostly prohibited within the city boundaries. Staff members permitted to use vehicles primarily do so during the construction process; during the event, transportation across the playa happens strictly by foot and bike. The Bureau of Land Management police operate vehicles for the duration of the event. Art cars, or “mutant” vehicles (of which there were sixty-eight in 2013), are driven around slowly, and mostly at night, as they showcase various themes. All vehicles must adhere to a five mile-per-hour speed limit within the boundaries of the city.⁹²

The Burning Man festival is guided by the founder’s ten principles: radical inclusion, gifting, decommodification, radical self-reliance, radical self-expression, communal effort, civic responsibility, leaving no trace, participation, and immediacy.⁹³ This code of ethics affects how participants interact with their environment and encourages them to come as they are, but leave with everything they brought. Art pieces are expected not to generate “matter out of place,” or MOOP, of any kind. Burning requires registration through the BMP to ensure that the artwork is responsibly placed and burned on the playa. They use imported piles of dirt and gravel to protect the ground

⁹² Oliphant, “Micrometeorology of an Ephemeral Desert City,” 55.

⁹³ Jim Dobson, “The Future of Burning Man Emerges at Fly Ranch, an Outrageous New World in the Black Rock Desert,” *Forbes*, 3 March 2021, <https://www.forbes.com/sites/jimdobson/2021/03/03/the-future-of-burning-man-emerges-at-fly-ranch-an-outrageous-new-world-in-the-black-rock-desert/?sh=3622e81c1e45>.

from fire; all of that must subsequently be removed at the end of the event, along with other debris. Artwork is evaluated on both the pre-event cleanup plan and their post-event follow-through. If an artist fails to address these rules appropriately, the festival organizers will decline future artworks or themed camps from that artist.⁹⁴ On the surface, the “leave no trace” ideal helps remind participants to take responsibility for how their everyday actions affect their environment, but Burning Man has created controversy for the juxtaposition of this principle and the massive amount of waste the festival generates each year through burning art alone.

Targeted Sustainability Efforts

Black Rock City is not sustainable enough to be in place longer than a week at a time, but the organizers of the festival have recently realized plans to erect a permanent establishment in the Black Rock Desert by the name of Fly Ranch. This site, approximately 3,800 acres of land, is located in the Great Basin of Nevada and home to the natural Fly Geyser. While the sustainable infrastructure is not yet in place, the land has been used to host over 700 nature walks, as well as many volunteer-based projects. The organizers hope to eventually turn the space into an agricultural site with sustainable systems in place for food, shelter, water, waste, power, and air.⁹⁵ In 2018, they partnered with the Land Art Generator Initiative to host an infrastructure design challenge aimed at

⁹⁴ Moore, “Sound Art at Burning Man,” 6.

⁹⁵ “Fly Ranch,” Burning Man Project, accessed 27 September 2022, <https://flyranch.burningman.org/>.

addressing the sustainability of food, power, water, waste, and shelter. The BMP granted honoraria to applicants for the 2018, 2019, and 2020 festivals, to support the construction of a prototype of winning design on-site. The organizers hope not only that funded prototypes will be sustainable, permanent structures; the BMP also states its goal of being carbon negative in 2030.⁹⁶ Some of the design proposals include a permaculture system for food infrastructure, water harvesting, and blackwater recycling; human habitation spaces, venues for learning, and sustainable energy infrastructure for wind, solar, geothermal, and biomass sources.⁹⁷

2007 Green Man: Before and After

After the 2006 Burning Man festival, the organization received criticism for their wasteful practices, which motivated a data gathering and changes for the 2007 event. The Cooling Man project collected data on the emissions generated by staff and participant travel, on-site power generation, fire art, fire cars, and burning the human effigy during the festival in 2006.⁹⁸ The project estimated that the event generated 27,493 tons of greenhouse gas emissions, which, when divided by 40,000 attendees, yields roughly .7

⁹⁶ “Fly Ranch,” Burning Man Project.

⁹⁷ Jim Dobson, “The Future of Burning Man Emerges at Fly Ranch, an Outrageous New World in the Black Rock Desert,” 3 March 2021, Forbes, <https://www.forbes.com/sites/jimdobson/2021/03/03/the-future-of-burning-man-emerges-at-fly-ranch-an-outrageous-new-world-in-the-black-rock-desert/?sh=3622e81c1e45>.

⁹⁸ Daniel Cha, “Burning Man Produces More Greenhouse Gas Than a Small Country,” *Your EDM*, 3 September 2018, <https://www.youredm.com/2015/08/22/burning-man-produces-more-greenhouse-gas-than-a-small-country/>.

tons of carbon emissions per attendee. In 2006, that number was double the national average per person in a week.⁹⁹ *LA Weekly* published an article in 2014 that unearthed Cooling Man's former website and the concerning data published within.¹⁰⁰

The theme for the 2007 Burning Man festival was The Green Man. While the phrase was first coined in a 1939 journal from the United Kingdom, the concept of "Green Man" is a Celtic symbol of rebirth.¹⁰¹ Burning Man organizers appropriated this symbol for their effigy and their main theme, highlighting the relationship between humanity and nature. Artists were encouraged to participate by illustrating the idea (but all art, regardless of theme, is welcome). Recognizing that they were commodifying nature for their benefit, Burning Man organizers promised to calculate the amount of emissions generated by the annual burning of the Man and its pedestal, and offset these emissions through the implementation of renewable energy resources and sponsoring community projects. However, the language used by the Burning Man Project in discussion of these ideas is greenwashed to some degree, since they attempted to minimize the significance of the festival's carbon emissions by first stating that annual

⁹⁹ Keith Plocek, "Let's Be Real: Burning Man is Bad for the Environment," 26 August 2014, *LA Weekly*, <https://www.laweekly.com/lets-be-real-burning-man-is-bad-for-the-environment/>.

¹⁰⁰ Plocek, "Let's Be Real: Burning Man is Bad for the Environment."

¹⁰¹ Ellen Castelow, "The Green Man," *Historic UK*, accessed 27 September 2022, <https://www.historic-uk.com/CultureUK/The-Green-Man/>.

Nevada wildfires “releas(e) far more carbon dioxide than the entire infrastructure of Black Rock City.”¹⁰²

The Cooling Man project found that at the 2007 Burning Man Festival, solid waste was decreased by seventy percent. Staff members began composting materials for the first time in Burning Man history. The event organizers switched from using 20,000 gallons of diesel fuel to using 20,000 gallons of locally-sourced biodiesel derived from cooking grease and supplied by Bently Bio-Fuels. A thirty-watt solar power array was used for the event, offsetting 6.9 tons of carbon emissions. Additionally, Burning Man partnered with the neighboring city Gerlach, Nevada to build their own 150-watt solar power array, and afterwards, gifted them the smaller solar array. The total carbon emissions on-site at the festival was 2,473 tons, 112 of which were released from simply burning the Man. That notwithstanding, participant travel to and from the event had the most significant environmental impact, producing 25,019 tons of carbon emissions.¹⁰³ The total emissions from the event itself were estimated by the Cooling Man project to be roughly 34,000 tons.¹⁰⁴

On-site at the 2007 festival, environmentally-focused exhibits were erected in a pavilion and sponsored by small, sustainably-driven companies and museums that sought to educate festivalgoers on the benefits of renewable energy sources and the negative

¹⁰² “2007 Art Theme: The Green Man,” Burning Man Project, accessed 27 September 2022, https://burningman.org/about/history/brc-history/event-archives/2007-2/07_theme/.

¹⁰³ Jonathan Scheff, “Green Burning Man,” *Scientific American* 297, no. 3 (2007): 34.

¹⁰⁴ “Environment,” Burning Man Project, accessed 27 September 2022, <https://burningman.org/about/history/brc-history/afterburn/07-2/environment/>.

byproducts of human-made products.¹⁰⁵ The organizers reasoned that if attendees were required to be mindful of their own campsite waste, they would take this mindset with them upon returning home. In contrast, the organizers' statement for their artists had little to do with environmental practices and instead encouraged them to "elicit nature's power from a much more personal and primal source of consciousness."¹⁰⁶ This statement romanticizes the relationship between nature and humanity and does not address the matter of sustainability in art.

It is plausible to suggest that the Green Man theme did not leave a lasting impact on the organizers of Burning Man, as the practices and projects of 2007 were discontinued in the following years.¹⁰⁷ The organizers state that their 2030 goal includes handling waste ecologically, implying that they are not currently doing so, despite implementing composting for Green Man 2007.¹⁰⁸

Even if the artistic projects at Burning Man 2007 were created in contemplation of nature and humanity, many of them still produced a considerable amount of waste. One of the main attractions at 2007 Burning Man was "Crude Awakening," a giant, ninety-foot-tall oil rig, surrounded by prostrate human forms made of steel. The energy

¹⁰⁵ Katie Herzog, "Hey Burning Man: Your Desert Party Sucks for the Rest of Us," *Grist*, 21 August 2015, https://grist.org/article/hey-burning-man-your-desert-party-sucks-for-the-rest-of-us/?utm_source=facebook&utm_medium=update&utm_campaign=socialflow.

¹⁰⁶ "2007 Art Theme: The Green Man," Burning Man Project.

¹⁰⁷ "2007 Art Theme: The Green Man," Burning Man Project.

¹⁰⁸ "Sustainability," Burning Man Project, accessed 27 September 2022, <https://burningman.org/about/about-us/sustainability/>.

consumed in burning this artwork was excessive: fireworks and 2,000 gallons of propane.¹⁰⁹ One climate blogger, in reflection of the scene, aptly stated:

In other words, they blew up a tank of fossil fuels to celebrate our rejection of fossil fuels— something that even in the moment it was happening, wasn't really happening. I hope we all got this.¹¹⁰

Clearly, Green Man was not completely successful; it was ultimately considered a failure. Brands promoted their products on the playa as a form of unofficial commercialization.¹¹¹ The Man effigy was burned ahead of schedule by a rogue prankster named Paul Addis.¹¹² As if to cap off an unsuccessful venture, the festival was marked by the tragic suicide of 22-year-old DJ and veteran attendee Jermain Barley.¹¹³ Many critics hoped that the BMP would turn a new leaf by setting a new precedent for the environmental consciousness of the festival going forward, but were disappointed with the inconsistency and insincerity of the ecological gestures initiated in 2007.¹¹⁴

¹⁰⁹ Judith Lewis, "Lessons from Burning Man 2007," *Grist*, 3 September 2007, <https://grist.org/article/teaching-green/>.

¹¹⁰ Lewis, "Lessons from Burning Man 2007."

¹¹¹ Brad Templeton, "Burning Man's Green Man Theme Failed— What About the American Dream?," *Brad Ideas*, 11 September 2007, <https://ideas.4brad.com/burning-mans-green-man-theme-failed-what-about-american-dream>.

¹¹² Lewis, "Lessons from Burning Man 2007."

¹¹³ Justin Berton, "Friends Mourn Burning Man Devotee Who Hanged Himself," *SF Gate*, 13 September 2007, <https://www.sfgate.com/bayarea/article/Friends-mourn-Burning-Man-devotee-who-hanged-2503752.php>.

¹¹⁴ Lewis, "Lessons from Burning Man 2007."

Conclusions

The Burning Man festival celebrates art, self-sufficiency and immediacy. While the proportion of non-white participants and artists has increased in the past few years, the population is still mostly white. The dry, flat, dusty, and windy environment temporarily becomes a venue for tens of thousands camping, dancing, biking, and burning their way through the week. The lives of tiny microorganisms that inhabit the playa and rely on the natural processes of the desert are disrupted by this recreational activity. The event has evolved over time, from a small informal gathering, to a for-profit venture, before finally becoming fully supported by the non-profit BMP organization.

The festival's immediacy theme encourages participants to live their experience moment by moment, without the comforts of daily life. As attendees watch the effigy and their favorite art pieces burn, they reflect on the materiality and physicality of their lives and experiences. Like the city and its structures, these experiences may also be fleeting and impermanent.

While the organizers have made concessions to the environmental impact of planning and maintaining a festival in such a location, these considerations do not negate the large-scale carbon emissions produced from burning literal tons of material for the sake of entertainment. The loosely environmentally-minded Green Man theme of 2007 had potential to lay the groundwork for sustainable practices like composting, but these practices ultimately became part of a commodification of the environment, and they were discontinued in following years. If the organization is to reach its carbon negative goal by

the year 2030, it has tremendous work to do. At its current pace, reaching that goal seems unlikely.

CHAPTER 3

BONNAROO MUSIC AND ARTS FESTIVAL

Overview

The Bonnaroo Music and Arts Festival was created with the intention to not only feature popular acts, but to showcase music and art in one unique weekend experience. Founding entities AC Entertainment and Superfly Productions aspired to produce a festival similar to Woodstock or the New Orleans Jazz Festival.¹¹⁵ The resulting festival is inspired by and modeled after the large, multiple-act rock concerts of the late 1960s and early 1970s.¹¹⁶ Ashley Capps, founder of AC Entertainment, spent the decade prior to establishing Bonnaroo as a concert promoter in Tennessee. At the same time, Phish, an American jam band phenomenon, had been hosting their own multiple act festivals, but went on a hiatus in the early 2000s. Taking advantage of this, organizers were able to sign on additional professionals from the Phish festival network to create Bonnaroo. “Bonnaroo” is a Cajun word for “celebration,” and is used in the title of Dr. John’s 1974 R&B album *Desitively Bonnaroo*.¹¹⁷ Promoters looked at several locations in Tennessee before selecting Manchester for its proximity to larger cities. Manchester is roughly an hour’s drive southeast of Nashville, two hours southwest from Knoxville, and over an

¹¹⁵ Mike Wharton, “Bonnaroo,” *Pro Lights and Staging News* 18, no. 7 (2017), 40.

¹¹⁶ Charlie Gee and Stephen Bales, “Manchester Tennessee’s Assimilation of the ‘Bonnarite’: A Qualitative Analysis of the ‘Other’ in Local Press on Bonnaroo,” *Studies in Popular Culture* 34, no. 2 (2012), 74, <http://www.jstor.org/stable/23416399>.

¹¹⁷ Wayne Bledsoe, “The Birth of Bonnaroo,” *Our Tennessee*, accessed 29 November 2021, <https://our.tennessee.edu/2012/the-birth-of-bonnaroo/>, 4.

hour northeast of Chattanooga, ensuring ticket sales from the concentrated populations in the surrounding area. Without spending any money on marketing or advertising, the first Bonnaroo festival sold 70,000 tickets in two weeks.¹¹⁸ The lineup was jam band heavy, but featured a broad range of artists, from Widespread Panic, String Cheese Incident, and Les Claypool, to Jurassic 5, Blackalicious, and Karl Denson's Tiny Universe. Since the festival's conception, Bonnaroo organizers have booked popular artists from varying genres, such as Elton John, Kanye West, and Jack White,¹¹⁹ as headliners to attract tens of thousands of fans to Manchester for an experience they can't find elsewhere. Grammy award-winning banjo player Béla Fleck, who performed at the first Bonnaroo, said that promoter Ashley Capps "has always been about sharing his love of diverse music with his community. One guy can make a huge difference in a region's musical IQ."¹²⁰

For several years, Bonnaroo was one of the largest independently produced music festivals in the United States.¹²¹ In 2014, the musical production company Live Nation Entertainment purchased AC (Ashley Caps) Entertainment for an undisclosed sum.¹²²

¹¹⁸ Francie Johnson, "Music Festivals Rise in Popularity," *The Crimson White*, 10 March 2014, 4.

¹¹⁹ Lauren Moraski, "2014 Bonnaroo Lineup Announced with Elton John, Kanye West as Headliners," *CBS News*, 20 February 2014, <https://www.cbsnews.com/news/2014-bonnaroo-lineup-announced-with-elton-john-kanye-west-as-headliners/>.

¹²⁰ Quoted in Bledsoe, "The Birth of Bonnaroo," 7.

¹²¹ Ray Waddell, "Co-founders, Superfly Presents: Jonathan Mayers & Richard Goodstone: the Bonnaroo Titans on Transcending Their Hippie Roots and Why it Was Time to Team with Live Nation," *Billboard* 127, no. 17 (Jun 13, 2015): 12.

¹²² Ray Waddell. "Live Nation Buys into Bonnaroo, Doubles Down on Festivals." *Billboard* 127, no. 13 (2015): 12.

Alongside original co-founder Superfly, improvements were implemented across the grounds. Toilets and showers were upgraded to accommodate running water.¹²³ The remaining Bonnaroo shares owned by Superfly were bought out by Live Nation in 2019.¹²⁴ Many veteran attendees were disgruntled by this sudden announcement and the subsequent changes.¹²⁵ A few days before the 2019 festival, a beloved aesthetic feature, a decorated archway over the entrance to the performance grounds, was incinerated in a controlled burn by the new organizers to make space for a new, but poorly-received, square archway adorned with digital screens.¹²⁶

Featured Activities

In addition to live music, Bonnaroo is a venue for comedy, film, dance, and other performing arts. The majority of the festival site is dedicated to campgrounds for attendees, with a site in the middle, called Centeroo, serving as the central hub for

¹²³ Karlie Powell, “REPORT: Live Nation Buying Out Bonnaroo’s Remaining Stake,” *YourEDM*, 27 June 2019, <https://www.youredm.com/2019/06/27/live-nation-buying-out-bonnaroo/>.

¹²⁴ Dave Brooks, “Live Nation Buying Out Superfly’s Share of Bonnaroo,” *Billboard*, 24 June 2019, <https://www.billboard.com/pro/live-nation-superfly-bonnaroo-share-purchase/>.

¹²⁵ Lewis, “Lessons from Burning Man 2007.”

¹²⁶ Andrew Wigdor, “RIP Bonnaroo Arch: Landmark Burned, Dismantled Due to ‘Structural Issues,’” *The Tennessean*, 11 June 2019, <https://www.tennessean.com/story/entertainment/music/bonnaroo/2019/05/21/bonnaroo-arch-fire-manchester-festival-landmark-burns-down/3750764002/>.

entertainment at Bonnaroo.¹²⁷ Aside from attending shows in Centeroo, participants can visit the Silent Disco (wherein music is broadcast directly to wireless headsets worn by participants), cool off in Snake and Jake's Christmas Barn, purchase official Bonnaroo merchandise, have a laugh at the Comedy Tent, or dance until sunrise with electronic DJs at the Kalliope Stage, sample beers from the Brooer's ("Brewer's") Tent, or just simply hang out. There are over ten stages at Bonnaroo, including the What Stage, This Stage, That Stage, This Tent, The Other Tent, Solar Stage, Sonic Stage, The Cinema Tent, The Silent Disco, and other smaller performance spaces.¹²⁸ The What Stage is the largest, the green in front of which comprises roughly 20% of the Centeroo site. Outside of Centeroo and scattered among the campgrounds are smaller points of interest, such as cafes, vendors, charging stations, first aid tents, lost and found booths, shower stations, shady structures, and small stages.

¹²⁷ Michael Ray, "Bonnaroo Music and Arts Festival," Britannica, 10 March 2011, <https://www.britannica.com/art/Bonnaroo-Music-and-Arts-Festival>.

¹²⁸ "Bonnaroo Music and Arts Festival," Bonnaroo, accessed 1 October 2022, <https://www.bonnaroo.com/>.

Music

In its beginning years, Bonnaroo was a haven for jam bands and hippies. Upon surveying the artists who performed at each festival between 2002 and 2019, I found it has evolved to incorporate more mainstream musical acts. Inspired by but no longer restricted by jam band culture, the lineup pays homage to its roots by featuring a handful of jam bands every year, such as Phish, Pigeons Playing Ping-Pong, and Papadosio.¹²⁹ In 2002, there were at least fifty-one performances.¹³⁰ I qualify this figure because popular musicians have hosted unofficial surprise performances around the camping grounds on top of official, scheduled performances.¹³¹ Of those performances, fourteen were by or led by people of color (POC). In 2019, there were at least 135 performances, nearly three times the number of artists hosted at the first Bonnaroo.¹³² Twenty-two of these performances were by POC artists. As the festival has expanded to include a larger lineup, the genres represented have become more varied, but conversely, the proportion of white artists has increased.

¹²⁹ Rex Thomson, “Bonnaroo Kicks Off with Stellar Sets from Vulfpeck, Con Brio, Papadosio, and More,” *Live for Live Music*, 10 June 2016, <https://liveforlivemusic.com/features/reviews/bonnaroo-kicks-off-with-stellar-sets-from-vulfpeck-con-brio-papadosio-more/>.

¹³⁰ “Bonnaroo 2002 Schedule,” Bonnaroo, accessed 10 October 2022, <http://bonnaroo.com/schedule/2002.aspx>.

¹³¹ Buckeye Wax, “Secret GriZ b2b CHERUB Set - Bonnaroo 2016 Campgrounds,” 10 December 2016, Video, 3:24, <https://www.youtube.com/watch?v=ADgykVFvh0E>.

¹³² Lisa Respers Frank, “Bonnaroo 2019 Lineup Announced,” *CNN News8*, January 2019, <https://edition.cnn.com/2019/01/08/entertainment/bonnaroo-2019-lineup/index.html>.

Environment

Bonnaroo staff and attendees come and go through Manchester as they attend the festival, leaving their imprint on the region. Attendees travel hundreds of miles from their homes to the rural, rolling grassland of Coffee County. The majority of the attendees camp on site, forgoing air conditioning (and sometimes bathing) for the long weekend. Sweltering temperatures can rise as high as 100 degrees in the afternoon sun as fans make their way across the grounds to see their favorite artists. These conditions are less than comfortable, but tens of thousands of fans are happy to endure them each summer.

Tennessee sits between the Appalachian Mountains and Mississippi River in the upper southeast region of the United States. Approximately one-half of Tennessee is forested and contains over 200 species of trees, many of which are commercially valuable. Tennessee is home to dozens of native mammals, including bobcats, coyotes, deer, and weasels; and one hundred species of amphibians and reptiles, many of which are snakes. Tennessee's wetlands host a vast array of migratory waterfowl, such as herons, geese, loons, while the woods and forests are filled with woodpeckers, vireos, warblers, and other small birds. Catfish, perch, minnows, and sunfish animate the waters and streams of Tennessee. The state has a moderate climate with cool winters and warm summers. Middle Tennessee is a level, fertile land with gentle rolling hills. This region contains the Nashville Basin, sixty miles of rolling terrain and sparse hills, where the Manchester is located.¹³³ The city has a total area of 14.2 square miles, the majority of

¹³³ James A. Hodges, "Tennessee," Britannica, last modified 21 October 2021, <https://www.britannica.com/place/Tennessee>.

which is land, while small bodies of water make up the remaining .04 square miles. There are two notable waterways in this region: the Little Duck River and the Duck River. The Little Duck crosses through the town, connecting to its larger counterpart, the Duck River, to the west of city limits. The two rivers drop into a waterfall within the Old Stone Fort State Archeological Park.¹³⁴ Bonnaroo is hosted on about 650 acres of grassland within Coffee County, called Great Stage Park.¹³⁵

Economics

Bonnaroo Music and Arts Festival commodifies urban entertainment in a rural setting. Bonnaroo organizers promote the event as a sustainable destination festival, but many aspects of the festival are in conflict with the concept of sustainable development. Commercial projects that capitalize on economic growth are at odds with environmental sustainability. Like Burning Man, Bonnaroo is a capitalistic venture that seeks to make a profit. In 2010, Bloomberg News estimated Bonnaroo's profits to be roughly twelve million dollars a year.¹³⁶ Michael Rapino, the CEO of Live Nation and the current owner of the festival, made roughly 8.4 million dollars on top of his three-million-dollar salary

¹³⁴ "Geographic Identifiers: 2010 Census Summary File 1 (G001): Manchester City, Tennessee," U.S. Census Bureau, accessed 3 December 2021, https://archive.ph/20200213053616/http://factfinder.census.gov/bkmk/table/1.0/en/DEC/10_SF1/G001/1600000US4745500.

¹³⁵ "Great Stage Park: Manchester, Tennessee," accessed 1 October 2022, <https://www.greatstageparkevents.com/>.

¹³⁶ Chris Parker, "The Economics of Music Festivals: Who's Getting Rich, Who's Going Broke," *LA Weekly*, 17 April 2013, <https://www.laweekly.com/the-economics-of-music-festivals-whos-getting-rich-whos-going-broke/>.

in 2018. Rapino promised to give up his exorbitant salary for a year to reduce company expenses during the COVID-19 pandemic.¹³⁷ However, two months following that statement, the CEO silently reneged on his promise and accumulated \$1.7 million dollars over the year.¹³⁸

In contrast to these figures, the cost of living in Manchester is twelve percent lower than the national average and two percent lower than the Tennessee average.¹³⁹ Between 2001 and 2004, a time period spanning the emergence of Bonnaroo, Coffee County saw a notable increase in wholesale trade, food and beverage services, as well as an increase in arts, entertainment, and recreation sales. Similarly, total employment in Coffee County increased by nine percent during this time.¹⁴⁰ In 2005, Arik and Penn reported that while in Great Stage Park and the surrounding area, visitors spend exorbitant amounts of money. Of the attendees that commuted, forty percent stayed in lodging in Coffee County. Outside festival grounds, Bonnaroo attendees spent 8.63 million dollars, mainly through the purchase of groceries and gasoline.¹⁴¹

¹³⁷ Ethan Millman, “Live Nation’s CEO is Giving Up His \$3 Million Salary Over the Coronavirus,” *Rolling Stone*, 13 April 2020, <https://www.rollingstone.com/pro/news/live-nation-rapino-salary-coronavirus-982685/>.

¹³⁸ Dave Brooks, “After Briefly Forfeiting Salary, Live Nation Rapino Earned \$1.7M Last Year,” *Billboard*, 28 April 2021, <https://www.billboard.com/pro/live-nation-ceo-michael-rapino-earned-2020/#!>.

¹³⁹ “Cost of Living in Manchester, Tennessee, United States,” Salary Expert, accessed 29 November 2021, <https://www.salaryexpert.com/cost-of-living/united-states/tennessee/manchester>.

¹⁴⁰ Murat Arik and David A. Penn, “Economic Impact of Bonnaroo Music Festival on Coffee County,” report prepared for Axis Ventures, Knoxville, 2005, 15.

¹⁴¹ Arik and Penn, “Economic Impact of Bonnaroo on Coffee County,” 8.

The cost for entry at Bonnaroo starts around five hundred dollars, but attendees can also purchase ever-more-deluxe ticket packages that can cost upwards of four thousand dollars.¹⁴² The festival also offers a volunteer program, allowing attendees to work three six-hour shifts across the festival in exchange for free entry.

Demographics

In contrast to the grandeur of the festival that it hosts, the city of Manchester is actually quite small and ethnically homogenous. In 2002 when Bonnaroo began, the population of Manchester was over 8,000. As of 2019, the population was estimated to be approximately 11,000, an increase of nearly twenty percent.¹⁴³ When Bonnaroo attendees arrive in the city, the population expands nearly ten times. Tennesseans comprise the largest percentage of Bonnaroo visitors from any U.S. state, but less than one percent of those attendees are Manchester residents.¹⁴⁴ The vast majority of Manchester's population is white, with Black people comprising the second highest portion of the population at four percent.¹⁴⁵

¹⁴² Jamie Favorite and Matt Kemmerley, "Bonnaroo Music and Arts Festival," *The Fest Feed*, accessed 10 November 2021, <https://www.thefestfeed.com/bonnaroo/>.

¹⁴³ "Population and Housing Estimates," U.S. Census Bureau, accessed 3 December 2021, <https://www.census.gov/programs-surveys/popest/data/tables.2019.html>.

¹⁴⁴ Arik and Penn, "Economic Impact of Bonnaroo Music Festival on Coffee County," 5.

¹⁴⁵ "How Many People Live in Manchester, City, Tennessee," *The Tennessean*, accessed 29 November 2021, <https://data.tennessean.com/census/total-population/total-population-change/manchester-city-tennessee/160-4745500/>.

The socio-demographics of the Bonnaroo festival attendees are more varied than those of city of Manchester, but similarly, they are mostly white. In 2005, attendees came from almost all fifty states, Canada, and a handful of European and Asian countries.¹⁴⁶ A 2018 study analyzed the foot traffic at the 2018 Bonnaroo Festival, finding that an estimated 79.10% of participants were white. Black people comprised 12.59% of attendees. Asian participants were underrepresented at the festival, making up only 3.47% of the festival population. The majority of attendees were adults aged eighteen to twenty-nine years-old. Thirteen percent were thirty to forty-four years old, and ages forty-five to sixty-four comprised the final three percent.¹⁴⁷

General Environmental Efforts

An unavoidable byproduct of music festivals is the waste generated by attendees consuming food and water. Considering that 70,000-80,000 people attend annually, Bonnaroo's organizers had to confront the amount of waste their festival generates and create sustainable policies in response. A study of the economic impact of Bonnaroo on Coffee County found that in 2005, attendees came from all 50 states and 24 countries. Ninety-two percent of attendees traveled to the event in their own vehicle, five percent by air, and one percent by bus. Upon arrival, ninety percent of visitors camped on the ground or in recreational vehicles, while the remaining ten percent commuted to and from the

¹⁴⁶ Arik and Penn, "Economic Impact of Bonnaroo on Coffee County," 8.

¹⁴⁷ "Foot Traffic Analysis of the Bonnaroo Music Festival 2018," Skyhook, 18 June 2018, <https://www.skyhook.com/blog/what-foot-traffic-analysis-reveals-about-bonnaroo-music-festival>.

event.¹⁴⁸ Such a widely dispersed population is antithetical to the sustainable ideas Bonnaroo seeks to promote when vehicles significantly contribute to global warming through the emission of greenhouse gasses, creating air and noise pollution. The success of this environmental program heavily relies on its attendees.

To offset some of these pollutants, the organizers of Bonnaroo have sought to promote sustainable lifestyles for the concert-goers while they are living and dancing on the farm. The greening policies of the annual event are primarily enacted through education, outreach, and activism.¹⁴⁹ Bonnaroo staff and volunteers are emailed a “greening handbook” prior to the event to encourage sustainable decisions before, during, and after the event. In all agreements and contracts with partners, vendors, and sponsors, the Bonnaroo environmental mission is included.¹⁵⁰ In Bonnaroo’s beginning years, the organizers promoted a recycling rewards program to encourage attendees to make conscious choices when disposing of personal waste. In 2003, Bonnaroo’s organizers began hosting nonprofit organizations on the festival grounds to engage the public in local and global causes.¹⁵¹ In addition to these community outreach policies, the organizers also made an effort to cut down on unnecessary carbon costs by renting

¹⁴⁸ Arik and Penn, “Economic Impact of Bonnaroo on Coffee County,” 8.

¹⁴⁹ “13 Years of Green,” Bonnaroo, accessed 8 November 2022, <https://web.archive.org/web/20150402114744/http://www.bonnaroo.com/get-involved/sustainability/greening-history>, 1.

¹⁵⁰ James Kennel and Rebekah Sitz, “Greening Bonnaroo: Exploring the Rhetoric and Reality of a Sustainable Festival Through Micro-Ethnographic Methods,” *Global Events Congress IV*, Leeds, UK: 14-16 July 2010, 5.

¹⁵¹ “13 Years of Green,” Bonnaroo, 9.

equipment (such as lighting and poles) locally from the surrounding area, eliminating roughly 500 miles of trucking emissions.¹⁵²

These efforts were suitable for the first four years, but Bonnaroo's organizers were able to make more significant changes when they stopped renting the farmland and instead purchased it in 2006. That transfer in ownership gave organizers greater agency over their sustainability goals. Following this purchase, organizers erected a permanent composting station on the grounds, allowing them to enforce the rule that vendors only use and provide compostable utensils while working on Bonnaroo grounds.

During a four-day festival in a hot climate in which attendees are primarily outside, water is as much a necessity as it is an environmentally ethical concern. While attendees are heavily encouraged to carry a water bottle and stay hydrated, discarded water bottles can create a significant amount of waste. For the first several years of Bonnaroo, attendees could refill their water bottles at a handful of wells across the grounds, or purchase bottled water from vendors. To reduce the amount of plastic waste generated by attendees, Bonnaroo organizers partnered with the Plastic Pollution Coalition, an organization dedicated to globally aligning businesses, organizations, and leaders to work towards a world free of plastic pollution. Under this alliance, Bonnaroo began selling branded, reusable steel cups through the vendor called Steelys Drinkware.¹⁵³ These iconic steel cups are washable and feature a carrying strap for

¹⁵² "13 Years of Green," Bonnaroo, 1.

¹⁵³ BYO Bottle, "PPC: Refill Revolution at Bonnaroo Diverts 2 Million Plastic Cups and Water Bottles," 12 June 2017, <https://byobottle.org/ppc-refill-revolution-at-bonnaroo-diverts-2-million-plastics-cups-and-water-bottles-from-landfill/>.

accessibility. For fifteen dollars, an attendee can eliminate the need for single-use plastic cups while getting a dollar discount on any beer sold from Bonnaroo's vendors.¹⁵⁴

Targeted Sustainability Efforts

Some of these changes to Bonnaroo serve as visual signifiers of sustainability for the event, which may border on virtue signaling to outsiders. In 2008, Bonnaroo added staffed recycling stations throughout Centeroo to inform attendees on the proper disposal of different materials. The volunteers at these stations, known as Trash Talkers, are able to answer questions and offer information about how to properly dispose of waste, compost, and recycling.¹⁵⁵ Even if attendees aren't sustainably conscious, they are likely to interact with a Trash Talker at some point in the festival and walk away with a better understanding of both their carbon footprint and Bonnaroo's positioning on sustainability, which is beneficial to Bonnaroo in maintaining an eco-friendly image.

Another means for Bonnaroo to further their sustainable image is the implementation of Planet Roo. Installed in 2004, Planet Roo is a promotional eco-village at the center of the grounds dedicated to connecting attendees with sustainable causes and organizations.¹⁵⁶ Organizations are represented through interactive booths around the village to engage attendees in their favorite environmental causes. Specialist volunteers

¹⁵⁴ Jamie Favorite and Matt Kemmerley, "Bonnaroo," *The Fest Feed*, 3 October 2018, <https://www.thefestfeed.com/bonnaroo/>.

¹⁵⁵ "13 Years of Green," *Bonnaroo*, 5.

¹⁵⁶ "13 Years of Green," *Bonnaroo*, 9.

with experience in environmental NGOs (Non-Governmental Organizations), known as Planet Roo Ambassadors, work within Planet Roo and throughout the festival to raise awareness for the festival's "green" efforts.¹⁵⁷ Attendees can enjoy panel discussions, information sessions, documentary films, and workshops geared toward connecting attendees with sustainable causes in- and outside the festival. Some of the non-profits at Planet Roo emphasize the sustainability of human health, such as To Write Love on Her Arms, an organization dedicated to helping people struggling with depression, addiction, and self-harm.¹⁵⁸ Planet Roo is a sustainably-minded space juxtaposed among the less sustainable aspects of the festival.

The organizers of the event have made other significant advancements to maintain environmental responsibility. After almost a decade of relying on generators for power, Bonnaroo began powering their event from the Duck River Electric Grid. This permanent power source cut the number of on-site biodiesel generators from 95 to 35. Biodiesel is a renewable and biodegradable substance, blended with diesel and promoted as a sustainable alternative to fossil fuels. According to the Environmental Protection Agency, biodiesel emits eleven percent less carbon monoxide and ten percent less particulate matter than diesels.¹⁵⁹ In addition, Bonnaroo organizers pledged to reduce their carbon

¹⁵⁷ Kennel and Sitz, "Greening Bonnaroo," 7.

¹⁵⁸ Natasha A. Simmons, "Bonnaroo Lifestyles: Planet Roo," *Bowling Green Daily News*, 18 June 2019, https://www.bgdailynews.com/news/bonnaroo-lifestyles-planet-roo/article_dcede7ec-91e3-11e9-b79b-f35a534db434.html.

¹⁵⁹ "Biodiesel vs. Diesel: Everything You Need to Know," Central Florida Clean Cities Coalition, 27 April, 2020, <https://cflccc.org/biodiesel-vs-diesel-everything-you-need-to-know/>.

footprint by ten percent by partnering with Carbon Shredders, an organization dedicated to guiding organizers in sustainable event management.¹⁶⁰ Management of waste, recycling, and compost has been made possible in cooperation with the sustainable event management organization Clean Vibes. This organization was founded in 1997 in response to the growing need for organized waste removal in the North American music festival industry.

Hosting a large number of people within a small timeframe generates a massive amount of waste. In surveying the amount of waste diverted at Bonnaroo between 2002 and 2019, I found that the data recorded by the organizers became more specific over time as the quantity of waste increased. On the surface, this specificity indicates that the organizers cared to improve their past methods. However, the steadily increasing numbers show that the festival is growing in size and is responsible for a larger carbon footprint each year. The organizers have failed to provide the total amount of waste generated by the festival, a figure that would help put the diverted waste data into context. For example, the diverted waste is increasing over time, but if the ratio between diverted and created waste is staying the same, then the festival is not actually improving on a sustainable level. The data provided only accounts for the resources consumed in the set-up, during-show, and after-show periods; it does not account for the personal carbon footprint of each attendee during their stay on the farm. Considering the festival's large attendance size, it's plausible that the carbon footprint of attendees alone is significant.

¹⁶⁰ "13 Years of Green," Bonnaroo, 4.

A 2007 study by the Massachusetts Institute of Technology surveyed eighteen different lifestyles and found that the average carbon dioxide emissions per person annually in the U.S. was approximately twenty metric tons, whereas the world average is four tons.¹⁶¹ Considering this data and the fact that the majority of Bonnaroo's attendees originate from the United States, we can estimate the carbon emissions generated by Bonnaroo's attendees to be somewhere in the tens of thousands of tons. Attendance peaked in 2012 and 2019, yet hit its lowest point in 2016. This could possibly be related to the lineup, the weather, and the economy of the time, influencing ticket sales and attendance. With such a consistently large audience, community outreach is a crucial part of the environmental program at Bonnaroo as festival organizers seek to maintain their image as a sustainable event. Unofficial data I gathered showed only general trends, but suggest that the waste, recycling, and other materials diverted from the landfill through Clean Vibes are but a small fraction of the total emissions produced through association with Bonnaroo. Additionally, this data does not account for the carbon emissions spent by musicians traveling and putting on a show. If Bonnaroo were to publish its total carbon footprint, some fans might be dissuaded from attending for fear of contributing to environmental degradation. The standalone carbon offset information looks impressive at a superficial level, but numbers mean little when they are taken out of context. In a time of global environmental crisis. promoting the idea that Bonnaroo is the sustainable

¹⁶¹ "Carbon Footprint of Best Conserving Americans Is Still Double Global Average," Massachusetts Institute of Technology, ScienceDaily, 29 April 2008, <https://www.sciencedaily.com/releases/2008/04/080428120658.htm>.

festival option means that fans can drop hundreds of dollars on a ticket without feeling complicit in climate change.

However, an emergent environmental issue that is underrepresented in literature surrounding Bonnaroo is sound pollution. Noise pollution is defined by scholars Enda Murphy and Eoin A. King as “any unwanted sound created by human activities that is considered harmful or detrimental to human health or quality of life.”¹⁶² Scholars Edgar Bernat-Ponce et al. note that the effects of noise pollution on wildlife and biodiversity have been poorly studied.¹⁶³ In their work, they explore the effects of traditional festival noise on local house sparrows. They found that festival noise, including fireworks and powder-guns, negatively affected the reproduction levels of the birds by disrupting their nesting season.

While the politics surrounding attendance vary from attendee to attendee, the biggest draw to Bonnaroo is the prospect of shared community experiences facilitated through live music. In spite of how accessible recorded music is as a result of modern technology, the sheer volume of content devalues the work. Live performance, on the other hand, is the means in which experienced artists can set themselves apart from the infinite stream of recorded content. Warren Haynes, who performed with Gov’t Mule at

¹⁶² Enda Murphy and Eoin A. King, *Environmental Noise Pollution: Noise Mapping, Public Health, and Policy*. (Burlington and Massachusetts: Elsevier, 2014), 4.

¹⁶³ Edgar Bernat-Ponce, José A Gil-Delgado, and Germán M López-Iborra, “Recreational Noise Pollution of Traditional Festivals Reduces the Juvenile Productivity of an Avian Urban Bioindicator.” *Environmental Pollution* 286, 2021, 1.

Bonnaroo 2009, aptly stated that Bonnaroo fans are not simply buying a product when they purchase a ticket; they are paying for an intangible experience.¹⁶⁴

2009 Bonnaroo Festival

The 2009 lineup reflected the influence of jam band culture while also featuring a diverse spread of genres. The festival's smaller relative size in comparison to Lollapalooza or Coachella, and community atmosphere allows for unique, inter-connected musical experiences.¹⁶⁵ Having made the journey to Manchester, artists often stay for the entire weekend to see new music and spend time with fellow musicians.¹⁶⁶ The act of collaborating live with other musicians is an ode to jam-band culture. Collaborations between artists can happen on short notice— collaborations that, under normal conditions, would take a considerable amount of time, money, and coordination to achieve.

Bonnaroo brings an eclectic variety of styles together, giving artists the opportunity to cross over genre boundaries and reach new audiences. Between June 11th and June 14th, 2009, approximately 150 bands played across nine stages.¹⁶⁷ Musicians

¹⁶⁴ Austin Scaggs, "Bonnaroo 2009: Phish, Bruce, MGMT, Beasties Rock Wildest Bonnaroo Ever," *Rolling Stone*, 35.

¹⁶⁵ Nancy Levin, "12 Largest Music Festivals in the United States," *Largest*, 26 December 2018. <https://largest.org/entertainment/music-festivals-usa/>. Lollapalooza and Coachella host approximately 400,000 and 600,000 attendees respectively.

¹⁶⁶ Scaggs, "Bonnaroo 2009," *Rolling Stone*, 36.

¹⁶⁷ "Bonnaroo: Creating a Sustainable City," *PopMatters*, 5 August 2009, <https://www.popmatters.com/109394-bonnaroo-creating-a-sustainable-city-2496066050.html.2>

from Africa, including Malian kora player Toumani Diabate, Nigerian King Sunny Ade and the African Beats, Malian duo Amadou and Mariam, and Nigerian saxophonist Femi Kuti and the Positive Force, play on the same stages as bluegrass fusion musicians like banjo player Béla Fleck. Buzz acts, such as Animal Collective, St. Vincent, Dirty Projectors, Grizzly Bear, Neko Case, and TV on the Radio showed their expertise in entertaining a crowd. Musicians such as Merle Haggard, Booker T. Jones, Allen Toussaint, and Al Green reminded audiences of musical styles steeped in tradition and history. Popular acts transitioning into the middle ages of their careers, such as Nine Inch Nails, Gov't Mule, Robyn Hitchcock, Elvis Costello, and Wilco alternated between classics and new projects, stimulating the seasoned concertgoer. The two main headliners at Bonnaroo 2009 were Bruce Springsteen, performing with his E Street Band, and two sets of Phish— one on Friday night and one on Sunday night.

Most of these performers arrived on site by plane, bus, or car. Only one performer sought to subvert this norm. Louisville cellist Ben Sollee biked 330 miles from Frankfort, Kentucky, to Manchester, Tennessee with sixty pounds of gear— his cello, equipment, and luggage— strapped to his bicycle.¹⁶⁸ Sollee stopped to perform in cities during his trek, recording his experience through blog posts.¹⁶⁹ In addition to being a carbon-neutral

¹⁶⁸ “Bonnaroo Preview: Ben Sollee,” *The Wounded Messenger*, 3 June 2009, <https://woundedmessenger.wordpress.com/2009/06/03/bonnaroo-preview-ben-sollee/>.

¹⁶⁹ Stacy Owen, “Ben Sollee Bikes to Bonnaroo!,” *91.9 WFPK*, <https://wfpk.org/2009/ben-sollee-bikes-to-bonnaroo/>.

alternative to traditional transit, biking to the festival site allowed Sollee to bypass the heavy festival traffic surrounding the event.

On Thursday morning, fans were granted access to the main grounds of Bonnaroo, and the music began. The lineup of the day was dominated by indie rock acts. Indietronica band Passion Pit wailed emotionally at This Tent, a performance described by *Pitchfork* as being “the most self-assured band of the night.”¹⁷⁰ Portugal the Man took the crowd on a trip with their experimental indie pop at That Tent. On the other side of the grounds, rising R&B-inspired American rapper Janelle Monae provided some contrast for the crowd with her afro-futurist images and sounds, which were followed by hip-hop group People Under the Stairs. The two main stages remained dormant for the day in anticipation of the larger acts to come.

The festivities of Friday began with an afternoon Dirty Projectors set at That Tent. Art-rock musician and former Talking Heads frontman David Byrne was seen dancing offstage before joining the band for a performance of “Knotty Pine,” a song featured on “Dark Was the Night,” the twentieth compilation release from Red Hot Organization to raise funds for HIV and AIDS awareness. While the show was a musical success, there were reports of sound issues during the set.¹⁷¹ Later in the afternoon, Animal Collective brought their psychedelic indie rock to the Which Stage. Unfortunately, the sound was poorly mixed, the lights were ineffective in the bright sunlight, and as a result, a portion

¹⁷⁰ Rob Mitchum and Mark Richardson, “Bonnaroo 2009,” *Pitchfork*, 16 June 2009, <https://pitchfork.com/features/article/7669-bonnaroo-2009/>.

¹⁷¹ Mitchum and Richardson, “Bonnaroo 2009.”

of the audience left to seek out shade and better mixes. St. Vincent, backed by a band of multi-instrumentalists, gave a compelling performance to a small crowd at That Tent. By the early evening, the sound issues at Which Stage were corrected, allowing TV on the Radio, experienced festival performers, an opportunity to shine. At 8:30pm, classic American hip-hop group the Beastie Boys took to the main stage. While the quartet only had three microphones and a turntable between them, they easily managed to captivate the crowd with their energetic rhythms. The group invited rapper Nas on stage for a performance of “Too Many Rappers.” Over on Which Stage, Byrne gave a theatrical performance dotted with highlights from the 1980 Talking Heads album, “Remain in Light.” Byrne was followed by indie rock band Phoenix, experiencing the height of their popularity in 2009, who delivered a performance as refined as their records.¹⁷² Prior to Phish’s first set of the weekend, the field (circa eighteen acres) surrounding What Stage filled with fans in anticipation of the three-hour show. Once on stage, the band intricately weaved through their jam discography, a sound described by *New York Times* journalist Jon Parles as “most euphoric and airborne.”¹⁷³

The third day of the festival featured many folk and rock artists, including Gov’t Mule, Bon Iver, Of Montreal, The Decemberists, and MGMT. New Orleans R&B artist Allen Toussaint and indie-rock musician Jenny Lewis joined Elvis Costello at That Tent for what was originally billed as a solo set.¹⁷⁴ Springsteen headlined on Saturday night,

¹⁷² Mitchum and Richardson, “Bonnaroo 2009.”

¹⁷³ Jon Pareles, “Generations Mingle at This Year’s Bonnaroo,” *The New York Times*, 14 June 2009, <https://www.nytimes.com/2009/06/15/arts/music/15bonnaroo.html>.

¹⁷⁴ Pareles, “Generations Mingle at This Year’s Bonnaroo.”

engaging with the eager audience by taking requests and jumping into the crowd. His three-hour set featured twenty-eight songs, including a half hour of encores.¹⁷⁵ Journalist Jim Fusili described the Springsteen show from his firsthand experience attending the festival:

As I roamed the crowd on Saturday night during Mr. Springsteen's slow-starting but ultimately triumphant performance, I wondered if he could win over that portion of the audience that seemed blasé. He did, in much the same way as when he broke out almost forty years ago: by playing as if getting his music across was his life's purpose. (Fusili, 2).

Forty minutes after the jubilant Springsteen show, Nine Inch Nails performed dance beats and hard-rock guitar as the crowd danced along. Before playing their final song and encores, front man Trent Reznor announced that Bonnaroo 2009 would be the band's last show in the United States.¹⁷⁶ After thanking the audience for their support, Reznor invited prog-metal act Dillinger Escape Plan on stage to perform a rendition of the Nine Inch Nails song "Wish." While announcing this surprise, tongue-in-cheek Reznor described Dillinger Escape Plan as a band that is "not that cool . . . we happen to know those guys, and since we're trying to increase their coolness a little bit, we thought

¹⁷⁵ Jim Fusilli, "Music Festival: Bonnaroo Brings Them In," *The Wall Street Journal Eastern Edition*, New York, N.Y: Dow Jones & Company Inc, 2009.

¹⁷⁶ "Cold and Black and Infinite- North America 2018 with Special Guests Jesus and Mary Chain," Nine Inch Nails, accessed 3 December 2021, <https://www.nin.com/tickets2018/>. Nine Inch Nails, despite their 2009 announcement that the band was done performing in the United States, toured North America in 2018.

we'd invite them out tonight."¹⁷⁷ Getting a word-of-mouth endorsement from the front man of Nine Inch Nails no doubt improved Dillinger Escape Plan's notoriety as a band.

The final day of the festival offered an even blend of genres, including the alternative rock of Cage the Elephant, prog metal group Coheed and Cambria, folk violinist Andrew Bird, hip-hop and soul artist Erykah Badu, and iconic rapper Snoop Dogg. Badu, backed by the grooves of jazz instrumentalists, sang, rapped, and lectured passionately to her enraptured fans at What Stage on Sunday afternoon. She was followed directly by Snoop Dogg, then reappeared a few hours later as a surprise guest to perform "Lodi Dodi" with the rapper. Bonnaroo 2009 came to a dramatic close on Sunday night with an emotional final performance by Phish. While all members of Phish had played at Bonnaroo separately, this was Phish's first Bonnaroo performance as a band.

Additionally, the show was their only festival appearance of the summer, intensifying audience anticipation with the exclusivity of the event. Phish performed classics for their die-hard Phans, covers of familiar songs (such as AC/DC's "Highway to Hell") for the undecided, and new songs for everyone in between. At the climax of the show, Springsteen joined Phish on stage to the revelry of the crowd. Together, they gave an exuberant performance of "Mustang Sally," "Bobby Jean," and "Glory Days," featuring back-and-forth solos between Phish's Trey Anastasio and Springsteen. Anastasio, moved by the performance, told the crowd "He's my boyhood hero. He's still my hero today."¹⁷⁸

¹⁷⁷ "Nine Inch Nails 2009-06-13 Manchester, Bonnaroo Music Festival - Full Show - NIN Live Archive," Youtube, 14 March 2020, <https://www.youtube.com/watch?v=MQuiiIkI2q0>.

¹⁷⁸ Scaggs, "Bonnaroo 2009: Phish, Bruce, MGMT, Beasties Rock Wildest Bonnaroo Ever," 35.

After Phish closed out their set on Sunday, festival goers eventually trudged back to their campsites to sleep or party until Monday, the day campers are expected to pack up and leave the grounds. The Centeroo area remained open for the rest of the evening and morning, hosting sunrise sets on smaller stages for those not ready to sleep.

A 2009 ethnographic study by James Kennel and Rebekah Sitz identifies three different ways that Bonnaroo's greening policies translated into sustainable event practices in 2009: through educational activities, the creation of sustainable spaces, and by embedding green issues into the event's core values. In 2009, organizers increased the amount of sustainability signage in prominent locations on the grounds, like around the watering stations, with the goal of educating attendees about the resources they consumed. Despite these hopeful policies, Kennel observed that in 2009, many vendors ran out of compostable materials and opted for paper and plastic products. At the end of the festival, many vendors weren't sorting their recycling and compost, and instead chose to treat everything as landfill waste. Kennel also reported that fields surrounding stages were covered in trash each morning.¹⁷⁹

¹⁷⁹ Kennel and Sitz, "Greening Bonnaroo," 9.

Conclusions

While many fans go to Bonnaroo for the positive community experience, it's not for everyone. For example, one blogger found the atmosphere of the event, "radiating positivity," to be sickeningly sweet to the point of insincerity.

But such pomp strikes me as so disingenuous that it riles up every bit of snark I can muster. No, Bruce, I will not build a metaphorical house in the hills of Tennessee for you – not of love, faith, hope and especially not "sexual healing." So there, that's the worst of me as a critic. Two days into Bonnaroo and my veins were itching to scratch past the pageantry of the occasion and call it like I see it.¹⁸⁰

The experience of Bonnaroo is not just for fans and critics- many of the musicians that attended in 2009, as performers or fans, reflected on their experiences positively. After an unannounced afternoon set during the weekend, Jimmy Buffett shared that he'd "always wanted to come down here." Springsteen, attempting to disguise himself in a hat, was seen dancing in the pit during MGMT set. However, Patrick Hallahan, the drummer of My Morning Jacket, attending as a fan, found himself disgruntled with the overwhelming lineup, saying that the best he could do was "wake up, circle the list of shows you want to see, and hope you make it to half of them."¹⁸¹

By exploring its environment, economy, and society, we can understand how the organizers of Bonnaroo Music and Arts Festival have cultivated its image as a sustainable festival while highlighting the less visible environmental impacts of the festival.

Bonnaroo practices sustainability through their treatment of waste, recycling, compost,

¹⁸⁰ Dustin Allen, "Bonnaroo 2009: A Shot in the Arm," *Treble*, 22 June 2009, <https://www.treblezine.com/bonnaroo-2009-a-shot-in-the-arm/>.

¹⁸¹ Scaggs, "Bonnaroo 2009," 36.

and energy, but still benefits from the commodification of nature. The data presented by Bonnaroo organizers as carbon offsets can be seen as subtle greenwashing when juxtaposed with the omission of the data concerning the event's overall waste and carbon emissions. Bonnaroo's large size capitalizes on community engagement to ensure the success of their environmental program. By comparing the attendance rates to the average carbon emissions in America, we can make a rough approximation of the carbon footprint of each attendee while at the event. Similar to the ways that Bonnaroo juxtaposes concepts of sustainability in an unsustainable space, the lineup of music brings urban people to a rural setting. The organizers have made new efforts in sustainability each year, but these efforts are not enough to altogether cancel out the emissions of such a large event.

CHAPTER 4

CONCLUSION: BENEFITS AND THOUGHTS FOR THE FUTURE

Music festivals have negative environmental effects, but conversely, they can have a positive impact on the lives of the individual attendees. As far back as the 6th century BCE, the relationship between morality and music was a recurring topic among philosophers such as Pythagoras in ancient Greece, and China as seen in the works of Confucius. In seeking to understand human diversity, philosophers believed that music could make people behave in specific ways.¹⁸² In a time when society relied on civic responsibility, the influence of music on one's character was not taken lightly. Ancient Roman and Greek texts document the negative connotations of certain modes, as they were believed to directly influence the moods and actions of the listener.¹⁸³

Researchers now study the ways that music provides avenues for strangers to connect, a phenomenon studied by Ian Cross and Ghofur Woodruff.¹⁸⁴ Regarding social organization, they have noted that “[m]usic performs a huge array of functions across different cultures, but one very generic feature that they all appear to share is the management of social relationships, particularly in situations of social uncertainty.” Therefore, music can enhance the success of inter-group encounters.¹⁸⁵ Social musical

¹⁸² Kay Norton, *Singing and Wellbeing: Ancient Wisdom, Modern Proof*. New York; Routledge, 2016, 61.

¹⁸³ Norton, *Singing and Wellbeing: Ancient Wisdom, Modern Proof*, 61.

¹⁸⁴ Ian Cross and Ghofur Woodruff, “Music as a Communicative Medium,” *The Prehistory of Language* (Vol. 1, pp. 113-144). Oxford: Oxford University Press, 2009, 114-115.

¹⁸⁵ Cross and Woodruff, “Music as a Communicative Medium,” 115.

gatherings vary across culture and time, influencing how one may act in these specific scenarios, but the psycho-physiological benefits remain consistent. In studies surrounding live performance, human biology, and stress management, music has been shown to increase the body's hormones that improve mood and decrease levels of cortisol, a biomarker indicating the presence of stress. In addition to these physiological benefits, there exists the phenomenon of entrainment, wherein auditory rhythms influence and entrain motor responses in our bodies consciously and subconsciously.¹⁸⁶ Cross and Woodruff note that rhythm “. . . also provide(s) a temporal framework that facilitates social interaction through entrainment.”¹⁸⁷ Because our bodies naturally and subconsciously entrain with an external time-keeper, sharing a rhythm with strangers allows us to connect by imagining we share a common ground of sorts. Social groups need coordination to function cohesively, a phenomenon studied by scholars Ilanit Gordon and Vai Gilboa. In their research on synchronicity and group bonding, subjects were instructed to drum together. Their behavioral motions were recorded and the cardiologic synchronicity of the group was examined through electrocardiograms.¹⁸⁸ Scholars Patrick E. Savage and colleagues suggest that proto-musical behaviors in humans evolved biologically over time. These behaviors that began as cultural inventions rewarded our ancestors by allowing them to bond socially, the benefits of which impacted

¹⁸⁶ Norton, *Singing and Wellbeing: Ancient Wisdom, Modern Proof*, 69.

¹⁸⁷ Cross and Woodruff, “Music as a Communicative Medium,” 12.

¹⁸⁸ Ilanit Gordon, Avi Gilboa, Shai Cohen, and Tomer Kleinfeld. “The Relationship between Physiological Synchrony and Motion Energy Synchrony during a Joint Group Drumming Task.” *Physiology & Behavior* 224, (Oct 01, 2020): 5.

them on a biological scale.¹⁸⁹ Additionally, a 2016 study by researchers Daniel Weinstein and colleagues suggests that performing music as a group increases one's pain threshold. The project explored how group size impacted social bonding, and subsequently, the perception of pain. Weinstein found that while increasing group size did not increase the average pain threshold, singing in a larger group fostered stronger feelings of connection between members.¹⁹⁰ Not only did our ancestors rely on the coordination of a large group to survive, but their bodies subconsciously rewarded them for it. To participate in live music is a performance itself—engaging in a shared rhythm with a large group facilitates connection and belonging. Music festivals feed our conscious and subconscious cravings for socialization.

Just as the cathartic rock and roll music of Woodstock drew thousands of fans together during a time of political unrest in the United States, modern festivals give fans the opportunity to share common experiences with strangers and leave with a better understanding of their fellow human beings. A world without large, participatory music festivals would mean that consumers would need to find other delivery systems for the positives that may not outweigh the urgency of ecological responsibility, but at least represent an “other side of the coin” to consider.

¹⁸⁹ Patrick E. Savage, Psyche Loui, Bronwyn Tarr, Adena Schachner, Luke Glowacki, Steven Mithen, and W. T. Fitch, "Music as a Coevolved System for Social Bonding," *Behavioral and Brain Sciences* 44, (2021): 22.

¹⁹⁰ Daniel Weinstein, Jacques Launay, Eiluned Pearce, Robert I.M. Dunbar, and Lauren Stewart. "Group Music Performance Causes Elevated Pain Thresholds and Social Bonding in Small and Large Groups of Singers," *Evolution and Human Behavior* 37, no. 2 (2016): 152.

Conclusion

The benefits of outdoor, multi-day festivals are hard to replicate in other environments. Modern, single-destination music festivals have come a long way in terms of environmental awareness since the original Woodstock festival in 1969. The twenty-first century has seen a rise in the frequency and reportage of the natural disasters and other noticeable effects of climate change, which impact communities worldwide. As a result, large-scale musical events have had to make overt gestures indicating that their producers are seriously taking the responsibility for their carbon footprints, and communicating these efforts to their audiences. Many musicians have become more aware of the side effects of music production, touring, and performing. This sensitivity is manifested through the minimization of their own travel and the transfer of their equipment, as they partner with and promote sustainable programs, and host events for environmental awareness such as Live Earth, to name a few methods. Some efforts by musicians and companies appear to be insincere acts of environmental virtue-signaling known as greenwashing.

Bonnaroo and Burning Man are two highly contrasting festivals that have, through independent development, become two of the most popular arts festivals in the United States. They are staged in strikingly divergent environments, and thus, have unique environmental considerations specific to their audiences and locations. For example, Burning Man is centered around fiery, controlled chaos, while also offering opportunities for individual empowerment through ritual and performance. The festival has become one of the largest venues for fire arts and fire performance in the world; to

remove the element of fire for the sake of sustainability would be to remove one of the core concepts upon which Burning Man is founded.¹⁹¹ Similarly, Bonnaroo operates in a unique environment where performances by critically-acclaimed musicians become uncommonly accessible for a week. Participants are bombarded by nearly non-stop headliners, and between sets, reminded to stay hydrated and “radiate positivity.” The human-made musical environment at Bonnaroo facilitates group bonding on a large scale. These experiences exist in ephemeral, temporary environments, but leave a lasting impact on participants.

At their most sustainable moments, Bonnaroo and Burning Man stood out among other American music festivals. Bonnaroo was once the largest independently-owned festival in the United States, even though it was eventually bought out by Live Nation. Lest they sacrifice the audiences that see them as relatively sustainable, the current production company still relies on their reputation of being eco-conscious. The producers of Burning Man, on the other hand, have deviated from capitalistic norms by transitioning from a for-profit to a non-profit organization over time. Despite this financial transition, Burning Man has continued to be an exceptionally excessive festival in its production of carbon emissions as a result of its iconic signature— burning art —and thus, can be considered antithetical to sustainability. The Burning Man Organization recognizes that in its current state, Black Rock City could not function sustainably year-

¹⁹¹ Rachel Bowditch, “Phoenix Rising: The Culture of Fire at the Burning Man Festival,” 114.

round, but its organizers have plans to implement structures in the same region that will be sustainable year-round.

Ultimately, both Bonnaroo and Burning Man are products of a capitalistic system and operate as such. Both festivals are far from being carbon negative or even carbon neutral. By examining the contrasting locations of Bonnaroo and Burning Man, we can analyze the environmental considerations taken by the organizers for each festival and their language surrounding those efforts— and see that there are discernible, significant improvements to be made.

There are many possible, sustainable alternatives to large, single-destination festivals. One is for fans to engage in local performances by local musicians. Supporting these performances subsequently stimulates the local economy through ticket sales, food and drink, and venue rental. Aside from local music, technological developments in video and audio streaming allow fans to attend concerts remotely through virtual reality, cutting out the emissions of travel entirely. Until this technology becomes affordable and accessible for a wide audience, however, it is not a viable alternative.

In the foreseeable future, it is plausible that large, capitalistic ventures will continue to make profits at the cost of the environment unless systematic change is enacted and enforced. In our current system, consumers must take personal responsibility to be informed about the purchases they make, an endeavor that is not necessarily accessible for everyone. The details concerning a festival's environmental practices would take a significant amount of time to collect as an outsider, as this information is not readily available for audiences. As humanity moves into an uncertain future troubled

by the effects of climate change, it is imperative that music festivals and other large single-destination festivals publish the environmental and sustainable data concerning their event in a digestible and accessible form, preferably hosted on a website. Festival organizers should be held accountable for the information they present to audiences about their practices. Moreover, the CEOs of these festival production companies make exorbitant amounts of money. Redistributing a fraction of these unnecessarily excessive salaries by investing in sustainable business practices would be an excellent start for organizers hoping to ever become carbon negative.

Although streaming is a relatively accessible way of experiencing music, live large-scale performances allow consumers to share space with artists that they would otherwise likely never meet. Such performances offer a level of intimacy that cannot be replicated in studio recordings. In addition to the rhythm that they share, the audience and the artists can connect over literal common ground. Both the artist and the audience are in the same place, experiencing the same environment. This reminds listeners of the inherent connection between the artist and their creation, something that can be lost through music streaming platforms and other parasocial delivery systems of music consumption. Participating in live music is humanizing.

When supporting our local musicians, we are supporting a future that does not rely on the gratification of consumerism, but rather, the gratification of human connection that music facilitates. A fan need not travel across the country to find community— it can be found at your local open mic night. As humanity moves forward in a world facing

environmental crisis, it is imperative that we, musicians and music lovers, consistently imbed sustainable practices into how we perform, consume, and participate in music.

REFERENCES

- Allen, Aaron S. "Ecomusicology." *Grove Music Online*. 25 Jul. 2013. <https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-1002240765>.
- Allen, Aaron S., and Kevin Dawe, eds. *Current Directions in Ecomusicology: Music, Culture, Nature*. Routledge Research in Music. New York: Routledge, 2016.
- Allen, Dustin. "Bonnaroo 2009: A Shot in the Arm." *Treble*, 22 June 2009, <https://www.treblezine.com/bonnaroo-2009-a-shot-in-the-arm/>.
- Alund, Natalie Neysa. "Bonnaroo 2016: New Bathrooms Open to Rave Reviews." *The Tennessean*, June 9, 2016. <https://www.tennessean.com/story/entertainment/music/bonnaroo/2016/06/09/bonnaroo-2016-first-ever-roo-loos-symphony/85671904/>.
- Andersson, Tommy D., Henrik Jutbring, and Erik Lundberg. "When a Music Festival Goes Veggie: Communication and Environmental Impacts of an Innovative Food Strategy." *International Journal of Event and Festival Management* 4, no. 3 (2013): 224–235.
- Andersson, Tommy D, John Armbrrecht, and Erik Lundberg. "Linking Event Quality to Economic Impact: A Study of Quality, Satisfaction, Use Value and Expenditure at a Music Festival." *Journal of Vacation Marketing* 23, no. 2 (2017): 114–132.
- Anderton, Chris. "Commercializing the Carnavalesque: the V Festival and Image/Risk Management," *Event Management* 12, no. 1 (2009): 39-51.
- Arik, Murat and David A. Penn. "Economic Impact of Bonnaroo Music Festival on Coffee County." Report prepared for Axis Ventures, Knoxville. 2005.
- Baggs, Michael. "Fyre Festival: Inside the World's Biggest Festival Flop." *BBC News*, 18 January 2019. <https://www.bbc.com/news/newsbeat-46904445>.
- Bailey, Eric. "California and the West; Burning Man Festival Fires Up Critics; Environment: Neighbors, Others Say Event Has Grown so Large, It Is Harming Desert. Founder Scoffs at Criticism: Home Edition." *The Los Angeles Times*, 28 August 2000. <https://www.latimes.com/archives/la-xpm-2000-aug-28-mn-11492-story.html>.

- Bain, Katie. "Trashed: Music Festivals are Environmental Disasters." *LA Weekly*, July 11, 2013. <https://www.laweekly.com/trashed-music-festivals-are-environmental-disasters/>.
- Ballard, Bryce. "There is No Planet "B" - How U.S. Music Festival Production Companies Can Reduce Their Negative Environmental Impact by Incorporating as a Benefit Corporation." *William and Mary Environmental Law and Policy Review* 45, no. 3 (2021): 957.
- Beaujon, Andrew. "Bonnaroo 2003 Music Festival." *Spin*, 7 August 2003, <https://www.spin.com/2003/08/bonnaroo-2003-music-festival/>.
- Beaulieu-Prévost, Dominic, Mélanie Cormier, S. Megan Heller, David Nelson-Gal, and Kateri McRae. "Welcome to Wonderland? A Population Study of Intimate Experiences and Safe Sex at a Transformational Mass Gathering (Burning Man)." *Archives of Sexual Behavior* 48, no. 7 (2019): 2055–2073.
- Benson, Shelly. "Bonnaroo Music & Arts Festival: Site Redesign." *UX Planet*, March 20, 2020. <https://uxplanet.org/bonnaroo-music-arts-festival-site-redesign-7deac38e1617>.
- Bernat-Ponce, Edgar, José A Gil-Delgado, and Germán M López-Iborra. "Recreational Noise Pollution of Traditional Festivals Reduces the Juvenile Productivity of an Avian Urban Bioindicator." *Environmental Pollution* 286, 2021.
- Berton, Justin. "Friends Mourning Burning Man Devotee Who Hanged Himself." *SF Gate*, 13 September 2022. <https://www.sfgate.com/bayarea/article/Friends-mourn-Burning-Man-devotee-who-hanged-2503752.php>.
- Biggers, Jeff. "Bonnaroo Goes Green: Rocker Ben Sollee Bikes to Mega Festival." *Huffpost*, July 5, 2009. https://www.huffpost.com/entry/bonnaroo-goes-green-rocke_b_211356.
- Billboard. "Burning Man Agrees to Attendance Cap But Continues to Fight Searches." Last modified 7 July 2019. <https://www.billboard.com/culture/events/burning-man-attendance-cap-no-searches-8518386/#!>.
- Bledsoe, Wayne. "Bonnaroo 2010: What a Long, Strange Trip it's Been." *Knoxville.com*, June 3rd, 2010.
- Bledsoe, Wayne. "The Birth of Bonnaroo." *Our Tennessee*, 2012. <https://our.tennessee.edu/2012/the-birth-of-bonnaroo/>.

- Bliss, Jessica. "From Abandoned Tents to Leftover Food: Where Do All of Bonnaroo's Extras Go When the Festival Ends?" *The Tennessean*, June 17, 2019.
- Bonnaroo Works Fund. "Our Impact." Accessed September 30, 2021. <https://bonnarooworksfund.org/impact>.
- Bonnaroo Works Fund. "Sustainability and Planet Roo." Accessed 25 September 2021. <https://bonnarooworksfund.org/sustainability>.
- Bottrill, C., D. Liverman, M. Boykoff. "Carbon Soundings: Greenhouse Gas Emissions of the UK Music Industry." *Environmental Research Letters* 5 (2010).
- Brennan, Matt, Jo Collinson Scott, Angela Connelly, and Gemma Lawrence. "Do Music Festival Communities Address Environmental Sustainability and How? A Scottish Case Study." *Popular Music* 38, no. 2 (2019): 252–275.
- Brennan, Matt, and Kyle Devine. "The Cost of Music." *Popular Music* 39, no. 1 (2020): 43–65.
- Brooks, Dave. "After Briefly Forfeiting Salary, Live Nation Rapino Earned \$1.7M Last Year." *Billboard*, 28 April 2021. <https://www.billboard.com/pro/live-nation-ceo-michael-rapino-earned-2020/>.
- Brooks, Dave. "Live Nation Buying Out Superfly's Share of Bonnaroo." *Billboard*, 24 June 2019. <https://www.billboard.com/pro/live-nation-superfly-bonnaroo-share-purchase/>.
- Bryant, Linda. "Bonnaroo to Undergo Environmental Sustainability Audit." *Nashville Post*, June 13, 2013. https://www.nashvillepost.com/home/bonnaroo-to-undergo-environmental-sustainability-audit/article_84aa6739-1290-52d6-8caf-8c3282de2660.html.
- Burning Man Project. "Art Installations Archive." Accessed 22 September 2022. <https://burningman.org/about/history/art-history/archive>.
- Burning Man Project. "Black Rock City 2022 Ticket Information." Accessed 9 November 2022. <https://tickets.burningman.org/>.
- Burning Man Project. "Burning Man Timeline." Accessed 4 October 2022. <https://burningman.org/timeline/1986/>.
- Burning Man Project. "Burning Man Transitions to Non-Profit Organization." Last modified 3 March 2014. <https://journal.burningman.org/2014/03/news/global-news/burning-man-transitions-to-non-profit-organization/>.

- Burning Man Project. "Census Archive." Accessed 27 September 2022.
<https://burningman.org/about/history/brc-history/census-data/>.
- Burning Man Project. "Environment." Accessed 27 September 2022.
<https://burningman.org/about/history/brc-history/afterburn/07-2/environment/>.
- Burning Man Project. "Fly Ranch." Accessed 27 September 2022.
<https://flyranch.burningman.org/>.
- Burning Man Project. "General: Music/DJs: What is This Year's Lineup? Help and F.A.Q." Accessed 5 October 2022. <https://help.burningman.org/hc/en-us/articles/360024793951-General-Music-DJs-What-is-this-year-s-lineup->.
- Burning Man Project. "Open Fire Guidelines." Accessed 10 November 2022.
<https://burningman.org/event/participate/art-performance/playa-art/art-installation-guidelines/fire-art-guidelines/open-fire-guidelines/>.
- Burning Man Project. "Sustainability." Accessed 27 September 2022.
<https://burningman.org/about/about-us/sustainability/>.
- Burning Man Project. "2007 Art Theme: Green Man." Accessed 27 September 2022.
https://burningman.org/about/history/brc-history/event-archives/2007-2/07_theme/.
- Burning Man Project. "2008 Art Theme: American Dream." Accessed 8 October 2022.
https://burningman.org/about/history/brc-history/event-archives/2008-2/08_theme/.
- Bonnaroo. "Bonnaroo Music and Arts Festival." Accessed 1 October 2022.
<https://www.bonnaroo.com/>.
- Bonnaroo. "Bonnaroo 2002 Schedule." Accessed 10 October 2022.
<https://www.bonnaroo.com/schedule/2002.aspx>.
- Bowditch, Rachel. *On the Edge of Utopia: Performance and Ritual at Burning Man*. London: Seagull Books, 2010.
- Bowditch, Rachel. "Phoenix Rising: The Culture of Fire at the Burning Man Festival." *Performance Research: A Journal of the Performing Arts* 18 (1): 113–22. 2013.
<https://search-ebscohost-com.ezproxy1.lib.asu.edu/login.aspx?direct=true&db=rft&AN=A872274&site=ehost-live&scope=site>.

- Campagnolo, Alex. 2019. "Uncovering the Barriers to Sustainable Music Consumption." Ph.D. diss., Trent University (Ontario, Canada).
- Cartolano, Maria C, Igal Berenshtein, Rachael M Heuer, Christina Pasparakis, Mitchell Rider, Neil Hammerschlag, Claire B Paris, Martin Grosell, and M. Danielle McDonald. "Impacts of a Local Music Festival on Fish Stress Hormone Levels and the Adjacent Underwater Soundscape." *Environmental Pollution* 265, 2020, 1-10.
- Castelow, Ellen. "The Green Man." *Historic U.K.*, accessed 27 September 2022. <https://www.historic-uk.com/CultureUK/The-Green-Man/>.
- Central Florida Clean Cities Coalition. "'Biodiesel vs. Diesel: Everything You Need to Know.'" 27 April 2020. <https://cflccc.org/biodiesel-vs-diesel-everything-you-need-to-know/>.
- Cha, Daniel. "Burning Man Produce More Greenhouse Gas Than a Small Country." *YourEDM*, 3 September 2018. <https://www.youredm.com/2015/08/22/burning-man-produces-more-greenhouse-gas-than-a-small-country/>.
- Chamoff, Jared. Sustainability in Emerging Chamber Music Festivals. MA thesis, American University, Washington, 2016. ProQuest Dissertations and Theses Global.
- Chen, Katherine K. "The Archaeology of Burning Man: The Rise and Fall of Black Rock City. Carolyn L. White. Albuquerque: University of New Mexico Press, 2020, 280 Pp. \$75.00, Cloth. ISBN 9780826361332." *Journal of Anthropological Research* 77, no. 3 (2021): 430–431.
- Chen, Katherine Kang-Ning. *Enabling Creative Chaos the Organization Behind the Burning Man Event*. Chicago, University of Chicago Press, 2009. <https://ebookcentral-proquest-com.ezproxy1.lib.asu.edu/lib/asulib-ebooks/reader.action?docID=471842>.
- Clark, Kelsey. "The Economics of Music Festivals." *Huffpost*, April 13, 2015. https://www.huffpost.com/entry/the-economics-of-music-festivals_b_7056508.
- Cohen, Diane. "The Music Industry's Battle Against Plastic Junk." *Rolling Stone*, May 19, 2016. <https://www.rollingstone.com/music/music-news/the-music-industrys-battle-against-plastic-junk-189843/>.
- Cottrell, Seth Stannard. "Burning Man's Mathematical Underbelly." *The Mathematical Intelligencer* 40, no. 3 (2018): 57–62.

- Cross, Ian, and Ghofur Woodruff. "Music as a Communicative Medium." *The Prehistory of Language* (Vol. 1). Oxford, Oxford University Press, 2009: 113-144.
- Cummings, Joanne. 2014. "The Greening of the Music Festival Scene: An Exploration of Sustainable Practices and Their Influence on Youth Culture." In *The Festivalization of Culture*. Farnham: Ashgate. <https://search-ebscohost-com.ezproxy1.lib.asu.edu/login.aspx?direct=true&db=rft&AN=A893385&site=ehost-live&scope=site>.
- Danton, Eric R. "Pitchfork Puts Music, Fans First; Performers' Names Aren't as Big, But Neither Are the Festival's Costs, Crowd: Statewide Edition." *The Hartford Courant*. Hartford, Conn: Tribune Publishing Company, LLC, 2007.
- Devadoss, Satyan L, and Diane Hoffoss. "Unfolding Humanity: Mathematics at Burning Man." *Notices of the American Mathematical Society* 66, no. 4 (2019): 572–575.
- Devine, Kyle. "Decomposed: A Political Ecology of Music." *Popular Music* 34, no. 3 (2015): 367-389.
- Dobson, Jim. "The Future of Burning Man Emerges at Fly Ranch, An Outrageous New World in the Black Rock Desert." *Forbes*, 3 March 2021, <https://www.forbes.com/sites/jimdobson/2021/03/03/the-future-of-burning-man-emerges-at-fly-ranch-an-outrageous-new-world-in-the-black-rock-desert/?sh=63472af71e45>.
- Elliott, Debbie. "Live Earth, Spanning the Globe." *NPR*, 7 July 2007. <https://www.npr.org/2007/07/07/11808193/live-earth-spanning-the-globe>.
- Elloyan, Richard. "Burning Man, Extreme Environmental Health." *Journal of Environmental Health* 74, no. 10 (June 2012): 14–15.
- Energy Information Administration. "U.S. Energy-Related Carbon Dioxide Emissions, 2019." 30 September 2020. <https://www.eia.gov/environment/emissions/carbon/>.
- Favorite, Jamie and Matt Kemmerley. "Bonnaroo Music and Arts Festival." *The Fest Feed*. 3 October 2018. <https://www.thefestfeed.com/bonnaroo/>.
- Flinn, Jenny, and Matt Frew. "Glastonbury: Managing the Mystification of Festivity." *Leisure Studies* 33, no. 4 (2014): 418–433.
- Flower. "Sustainable Concerts: Music Festivals Take Steps to Go Green." 17 March 2020. <https://www.drinkflower.com/blog/sustainable-concerts-music-festivals-take-steps-to-go-green/>.

- Flynn, Jennifer. "TDOT and THP Prepare for 2010 Bonnaroo." Tennessee State Government, 4 June 2010. <https://www.tn.gov/news/2010/6/4/tdot-and-thp-prepare-for-2010-bonnaroo.html>.
- Fornatale, Peter. *Back to the Garden: the Story of Woodstock*. New York: Simon & Schuster, 2009.
- Frank, Lisa Respers. "Bonnaroo 2019 Lineup Announced." *CNN News*, 8 January 2019. <https://www.cnn.com/2019/01/08/entertainment/bonnaroo-2019-lineup/index.html>.
- Frey, Bruno S. "The Economics of Music Festivals." *Journal of Cultural Economics* 18, no. 1 (1994): 29–39.
- Fusilli, Jim. "Music Festival: Bonnaroo Brings Them In." *The Wall Street Journal. Eastern Edition*. New York: Dow Jones 2009. <https://www.proquest.com/newspapers/music-festival-bonnaroo-brings-them/docview/399137100/se-2?accountid=4485>.
- Gallant, Michael. "Black Rock City's Beautiful Noise -- Sound Art and Electronic Music at Burning Man 2005." *Keyboard (Cupertino, Calif.)* 31, no. 12 (2005): 44–48.
- Gates, David. "Twenty-Five Years Later, We're Still Living in Woodstock Nation" Values Symbolized by the Woodstock Festival Still Pervade Society; Includes Profiles of People Who Were at Woodstock in 1969." *Newsweek* 124, no.6 (1994): 38-.
- Gee, Charlie, and Stephen Bales. "Manchester Tennessee's Assimilation of the 'Bonnarite': A Qualitative Analysis of the 'Other' in Local Press on Bonnaroo." *Studies in Popular Culture* 34, no. 2 (2012): 73–90. <http://www.jstor.org/stable/23416399>.
- Gervin, Kelly. 2017. "Music and Environmentalism in Twenty-First Century American Popular Culture." MM thesis, Bowling Green State University, 2017. <https://www.proquest.com/dissertations-theses/music-environmentalism-twenty-first-century/docview/1943340818/se-2?accountid=4485>.
- Giambrone, Eric. Sustainability Considerations for Music & Arts Festivals in the United States. Ph.D. diss., Tufts University, May 2011. <https://www-proquest-com.ezproxy1.lib.asu.edu/dissertations-theses/sustainability-considerations-music-amp-arts/docview/879424526/se-2?accountid=4485>.

- Gibson, Chris and Wong, C. "Greening Rural Festivals: Ecology, Sustainability, and Human-Nature Relations." in *Festival Places: Revitalizing Rural Australia*. Chris Gibson and John Connell eds., Bristol: Channel View, 92-105.
- Giordan, Chiara. "Drugs in Urine from Glastonbury Festival 'Pose Threat to Rare Eeels.'" *The Independent*, 28 September 2021.
<https://www.independent.co.uk/climate-change/mdma-drugs-river-glastonbury-festival-b1928252.html>.
- Gold, Adam and Joseph Hudak, Garret Woodward, Charlie Zaillian. "Bonnaroo 2019: 20 Best Things We Saw." *RollingStone*, 17 June 2019.
<https://www.rollingstone.com/music/music-lists/bonnaroo-2019-review-recap-kacey-musgraves-848817/>.
- Gordon, Ilanit, Avi Gilboa, Shai Cohen, and Tomer Kleinfeld. "The Relationship between Physiological Synchrony and Motion Energy Synchrony during a Joint Group Drumming Task." *Physiology & Behavior* 224, (Oct 01, 2020): 5.
 doi:<https://doi.org/10.1016/j.physbeh.2020.113074>.
- Gray, Richard. "The People Fighting the War on Waste at Music Festivals." *BBC Culture*, 27 June 2019. <https://www.bbc.com/culture/article/20190627-the-people-fighting-the-war-on-waste-at-music-festivals>.
- Green, David. "Live Earth: The Music and the Message." *NPR*, 8 July 2007.
<https://www.npr.org/2007/07/08/11813655/live-earth-the-music-and-the-message>.
- Grossweiner Bob, and Cohen, Jane. "Bonnaroo 2009 Sees Attendance Increase Over Last Year's Totals." *Ticket News*, 16 June 2009.
<https://web.archive.org/web/20130407203509/http://www.ticketnews.com/news/Bonnaroo-2009-sees-attendance-increase-over-last-years-festival-totals6916375>.
- Guyette, Margaret Q., and Jennifer C. Post. "Ecomusicology, Ethnomusicology, and Soundscape Ecology: Scientific and Musical Responses to Sound Study." In *Current Directions in Ecomusicology: Music, Culture, Nature*, ed. Aaron Allena and Kevin Dawe. 40–56. Routledge Research in Music. New York: Routledge, 2016.
- Hall, David. "Coldplay Conundrum: How to Reduce the Risk of Failure for Environmental Projects." *The Conversation*, 10 July 2018,
<https://theconversation.com/coldplay-conundrum-how-to-reduce-the-risk-of-failure-for-environmental-projects-99449>.

- Hand, Ashley. "Burning Man." *Iowa Review* 51, no. 1 (Spring, 2021): 79-92.
<http://login.ezproxy1.lib.asu.edu/login?url=https://www.proquest.com/scholarly-journals/burning-man/docview/2623915000/se-2?accountid=4485>.
- Herzog, Katie. "Hey Burning Man: Your Desert Party Sucks for the Rest of Us." *Grist*, 21 August 2015. https://grist.org/article/hey-burning-man-your-desert-party-sucks-for-the-rest-of-us/?utm_source=facebook&utm_medium=update&utm_campaign=socialflow.
- Hickey, Ric. "Bonnaroo 2013: Walk the Moon Thrills." *CityBeat*, 14 July 2013. <https://www.citybeat.com/home/blog/13033230/bonnaroo-2013-walk-the-moon-thrills>.
- Hiller, R Scott. "The Importance of Quality: How Music Festivals Achieved Commercial Success." *Journal of Cultural Economics* 40, no. 3 (2016): 309–334.
- Hillstrom, Kevin, and Hillstrom, Laurie Collier. 2012. *Woodstock*. Detroit: Omnigraphics, Incorporated. Accessed November 2, 2021. ProQuest Ebook Central.
- Hodges, James A. "Tennessee." Last modified 21 October 2021. <https://www.britannica.com/place/Tennessee>.
- Holmqvist, Christian. "Music Goes Green." *Finnish Music Quarterly* no. 1 (2018): 18-21.
- Howard, Jesslyn Alegre. "Event Architecture: Enacting Spatial Exotopy in the Liminal Environment of Burning Man." MA thesis, University of Washington, 2018. ProQuest Dissertations Publishing, 2018.
- Hughes, Hillary. "How Music Festivals are Going Green." *MTV News*, April 27, 2017. <http://www.mtv.com/news/3007019/music-festivals-green-recycling/>.
- Hulle, S. W. H. van; Audenaert, W.; Decostere, B.; Hogie, J.; Dejans, P. "Sustainable Wastewater Treatment of Temporary Events: the Dranouter Music Festival Case Study." *Water Science and Technology* 58, no. 8, 2008: 1653-1657.
- Itzkoff, Dave. "A Death at Bonnaroo." *The New York Times*, 18 June 2009, https://www.nytimes.com/2009/06/19/arts/music/19arts-ADEATHATBONN_BRF.html.
- Jones, Meegan. *Sustainable Event Management: A Practical Guide*. London: Earthscan, 2010.

- Jones, Steven T. (Scribe). *The Tribes of Burning Man: How an Experimental City in the Desert Is Shaping the New American Counterculture*. San Francisco: Consortium of Collective Consciousness. 2011. <https://ebookcentral-proquest-com.ezproxy1.lib.asu.edu/lib/asulib-ebooks/detail.action?pq-origsite=primo&docID=661446>.
- Kahn, Alya. "Diplo, Skrillex, Zhu, and More Heated Up the Playa," 5 September 2018. EDM.com. <https://edm.com/news/djs-at-burning-man>.
- Kane, Jenny. "By the Numbers: How Much Burning Man Makes, Spends, and the Top Salaries." *Reno Gazette Journal*, 17 December 2015. <https://www.rgj.com/story/life/arts/burning-man/2015/12/17/numbers-how-much-burning-man-makes-spends-and-top-salaries/77511952/>.
- Kavner, Lucas. "Bonnaroo Festival Reports Tenth Death Since 2002." *Huffpost*, 6 June 2011. https://www.huffpost.com/entry/bonnaroo-festival-reports-tenth-death_n_877005.
- Kennell, James, and Sitz, Rebekah. "Greening Bonnaroo: Exploring the Rhetoric and Reality of a Sustainable Festival Through Micro-Ethnographic Methods." *Global Events Congress IV*, Leeds, UK: July 14-16, 2010.
- Kiori Kawai. "About." Accessed 8 September 2022. <http://kiorikawai.com/>.
- Kozinets, Robert V. "Can Consumers Escape the Market? Emancipatory Illuminations from Burning Man." *The Journal of Consumer Research* 29, no. 1 (2002): 20–38.
- Krecker, Linda Susan. "Art Installations in the Desert: A Participant Observation Study of the Art of Real Life Burning Man and Second Life Burn2." PhD dissertation, Arizona State University, Tempe, 2014. ProQuest Dissertations & Theses Global.
- Kuijken, Bram, Mark A.A.M Leenders, Nachoem M Wijnberg, and Gerda Gemser. "The Producer-Consumer Classification Gap and Its Effects on Music Festival Success." *European Journal of Marketing* 50, no. 9/10 (2016): 1726–1745.
- Lang, Michael, and H. George-Warren. *The Road to Woodstock*. New York: Harper Collins, 2009.
- Laing, Jennifer and Warwick Frost. "How Green Was My Festival: Exploring Challenges and Opportunities Associated with Staging Green Events." *International Journal of Hospitality Management* 29, no. 2, 2010: 261-267.
- Laindy, Elliot. *Woodstock 1969: The First Festival*. Santa Rosa: Squarebooks. 1994. <https://search-ebshost->

- com.ezproxy1.lib.asu.edu/login.aspx?direct=true&db=rft&AN=A204649&site=ehost-live&scope=site.
- Laird, Paul R. "Newport Jazz Festival." *Grove Music Online*. 2003; Accessed November 14, 2021. <https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-2000327300>.
- Leave it to Nino. "About." Accessed 8 September 2022. <https://www.leaveittonino.com/about>.
- Leverentz, Harold and Mark Van Horn. 1999. "Zero Waste Goal: Minimizing Festival Trash." *Biocycle*, 40 (9): 45-48. Accessed September 25, 2021. <http://www.jgpress.com/BCArticles/1999/09994.html>.
- Levin, Nancy. "12 Largest Music Festivals in the United States." *Largest*, 26 December 2018. <https://largest.org/entertainment/music-festivals-usa/>.
- Lewis, Judith. "Lessons from Burning Man 2007." *Grist*, 3 September 2022. <https://grist.org/article/teaching-green/>.
- Light, Alan. 2012. *Bonnaroo: What, Which, This, That, the Other*. Edited by Holly George-Warren. New York: Abrams Image, 2012.
- Luna, Kristen. "Bonnaroo: A Destination, Not Just an Event." *National Geographic*, June 8, 2017. <https://www.nationalgeographic.com/travel/article/bonnaroo-activities-arts-community-music-festival>.
- Maasø, Arnt. "Music Streaming, Festivals, and the Eventization of Music." *Popular Music and Society* 41, no. 2 (2018): 154–175.
- Maasz, Gabor, Eva Molnar, Matyas Mayer, Monika Kuzma, Péter Takács, Zita Zrinyi, Zsolt Pirger, and Tibor Kiss. "Illicit Drugs as a Potential Risk to the Aquatic Environment of a Large Freshwater Lake after a Major Music Festival." *Environmental Toxicology and Chemistry* 40, no. 5 (2021): 1491–1498.
- Macrotrends. "U.S. Population 1950-2021." Accessed 1 December 2021. <https://www.macrotrends.net/countries/USA/united-states/population>.
- Mair, Judith, and Jennifer Laing. "The Greening of Music Festivals: Motivations, Barriers and Outcomes. Applying the Mair and Jago Model." *Journal of Sustainable Tourism* 20, no. 5 (2012): 683–700.

- Marchini, Ben. *Festivals and Sustainability: Reducing Energy Related Greenhouse Gas Emissions at Music Festivals*. Ph.D. diss., De Montfort University (Leicester, England), 2013.
- Massachusetts Institute of Technology. "Carbon Footprint of Best Conserving Americans Is Still Double Global Average." *ScienceDaily*, 29 April 2008. www.sciencedaily.com/releases/2008/04/080428120658.htm.
- McKay, George. *The Pop Festival: History, Music, Media, Culture*. New York: Bloomsbury, 2015.
- McKay, Mary Jane. "Bonnaroo 2010: Hot Times on Stage and Off." *CBS News*, 14 June 2010. https://www.cbsnews.com/8301-31749_162-20007571-10391698.html/.
- Mitchum, Rob and Mark Richardson. "Bonnaroo 2009." *Pitchfork*. 16 June 2009. <https://pitchfork.com/features/article/7669-bonnaroo-2009/>.
- Miller, Clay. "The Biggest Eco-Friendly Music Festivals." *Ways 2 Go Green*, July 30, 2012. <https://www.ways2gogreenblog.com/2012/07/30/guest-post-the-biggest-eco-friendly-music-festivals/>.
- Millman, Ethan. "Live Nation's CEO is Giving Up His \$3 Million Salary Over the Coronavirus." *Rolling Stone*, 13 April 2020. <https://www.rollingstone.com/pro/news/live-nation-rapino-salary-coronavirus-982685/>.
- Mills, Fred. "That's 'Roo for You: The Bonnaroo 2018 Festival." *BlurtOnline*, 2 July 2018. <https://blurtonline.com/feature/thats-roo-bonnaroo-2018-festival/>.
- Monroe, Jazz. "Massive Attack to Launch Major Study of Music Industry Carbon Emissions." *Pitchfork*, 28 November 2019. <https://pitchfork.com/news/massive-attack-launch-major-study-of-music-industry-carbon-emissions/>.
- Moore, Stephan, and Scott Smallwood. "Sound Art at Burning Man: Sonic Interventions in an Extreme Environment." *Revue Filigrane: Musique, Esthétique, Sciences, Société* no. 18, 30 May 2013.
- Morgan, Will. "Green Bonnaroo." *Elephant Journal*, June 21, 2009. <https://www.elephantjournal.com/2009/06/green-bonnaroo/>.
- Moraski, Lauren. "2014 Bonnaroo Lineup Announced with Elton John, Kanye West as Headliners." 20 February 2014. <https://www.cbsnews.com/news/2014-bonnaroo-lineup-announced-with-elton-john-kanye-west-as-headliners/>.

- Murphy, Enda, and Eoin King. *Environmental Noise Pollution: Noise Mapping, Public Health, and Policy*. Burlington and Massachusetts: Elsevier, 2014.
- Nine Inch Nails. "Cold and Black and Infinite- North America 2018 with Special Guests Jesus and Mary Chain." Accessed 3 December 2021, <https://www.nin.com/tickets2018/>.
- Nordvall, Anders, and Tobias Heldt. "Understanding Hallmark Event Failure: a Case Study of a Swedish Music Festival." *International Journal of Event and Festival Management* 8, no. 2 (2017): 172–185.
- Norton, Kay. *Singing and Wellbeing: Ancient Wisdom, Modern Proof*. New York: Routledge, 2016.
- Novakov, Anna. "Mapping Utopias: From New Babylon to Black Rock City." *AM: Art + Media*, no. 12 (2017): 9–16.
- Oliphant, Andrew J, Sam Stein, and Garrett Bradford. "Micrometeorology of an Ephemeral Desert City, the Burning Man Experiment." *Urban Climate* 23 (2018): 53–70.
- Owen, Stacy. "Ben Sollee Bikes to Bonnaroo!" *91.9 WFPK*, 8 June 2009. <https://wfpk.org/2009/ben-sollee-bikes-to-bonnaroo/>.
- Packer, Jan, and Julie Ballantyne. "The Impact of Music Festival Attendance on Young People's Psychological and Social Well-Being." *Psychology of Music* 39, no. 2 (2011): 164–181.
- Parab-Pandit, Shefali. "Mumbai Generates 15-20% More Festival Waste." *The Free Press Journal*. <https://www.freepressjournal.in/mumbai/mumbai-generates-15-20-more-festival-waste>.
- Pareles, Jon. "Generations Mingle at This Year's Bonnaroo." *The New York Times*, 15 June 2009. <https://www.nytimes.com/2009/06/15/arts/music/15bonnaroo.html>.
- Parker, Chris. "The Economics of Music Festivals: Who's Getting Rich, Who's Going Broke?" *LA Weekly*. 17 April 2013, <https://www.laweekly.com/the-economics-of-music-festivals-whos-getting-rich-whos-going-broke/>.
- Parguel, Béatrice, Florence Benoit-Moreau, and Cristel Antonia Russell. "Can Evoking Nature in Advertising Mislead Consumers? The Power of 'Executorial Greenwashing.'" *International Journal of Advertising* 34, no. 1 (2015): 107–134.

- Parodi, Oliver, Iganacio Ayestaran, and Gerhard Banse (eds.). "Sustainable Development: Relationships to Culture, Knowledge, and Ethics." Karlsruhe: KIT Scientific Publishing, 2011.
<https://www.ksp.kit.edu/site/books/e/10.5445/KSP/1000021734/>.
- Pasternack, Alex. "Bonnaroo 2009: How Green Was Your Music Festival?" *Huffpost*, July 25, 2009. https://www.huffpost.com/entry/bonnaroo-2009-how-green-w_b_220250.
- Pastorek, Whitney. "2009 Bonnaroo Music and Arts Festival." *Entertainment Weekly*, no. 1053-1054 (2009): 24–24.
- Paulsen, David and Nate Rau. "Bonnaroo Bounces Back: In Dramatic Turnaround, 2019 Festival to Sell Out." *The Tennessean*, 10 June 2019.
<https://www.tennessean.com/story/entertainment/music/bonnaroo/2019/06/10/bonnaroo-2019-sells-out-dramatic-turnaround/1370144001/>.
- Pedely, Mark. *Ecomusicology: Rock, Folk, and the Environment*. Philadelphia: Temple University Press, 2012.
- Pernecky, Tomas, and Michael Lück. *Events, Society and Sustainability: Critical and Contemporary Approaches*. London: Routledge, 2013.
- Peters, Julie A. "Case Study of a Gathering: The Ozark Music Festival." MA Thesis, Central Missouri State University, 1992.
<http://login.ezproxy1.lib.asu.edu/login?url=https://www.proquest.com/dissertations-theses/case-study-gathering-ozark-music-festival/docview/304049822/se-2?accountid=4485>.
- Petrusich, Amanda. "The Day Music Became Carbon-Neutral." *The New York Times*, 18 February 2020, <https://www.newyorker.com/culture/culture-desk/the-day-the-music-became-carbon-neutral>.
- Plastic Pollution Coalition. "Refill Revolution at Bonnaroo Diverts 2 Million Plastic Cups and Water Bottles." 12 June 2017. <https://byobottle.org/ppc-refill-revolution-at-bonnaroo-diverts-2-million-plastics-cups-and-water-bottles-from-landfill/>.
- Pocek, Keith. "Let's Be Real: Burning Man is Bad for the Environment." *LA Weekly*, 26 August 2014. <https://www.laweekly.com/lets-be-real-burning-man-is-bad-for-the-environment/>.

- PopMatters. "Bonnaroo: Creating a Sustainable City." 5 August 2009.
<https://www.popmatters.com/109394-bonnaroo-creating-a-sustainable-city-2496066050.html>.
- Powell, Karlie. "REPORT: Live Nation Buying Out Bonnaroo's Remaining Stake." *YourEDM*, 27 June 2019. <https://www.youredm.com/2019/06/27/live-nation-buying-out-bonnaroo/>.
- Prav Pillay. "2001 Wind Sutra." Accessed 8 September 2022.
<https://www.pravpillay.net/pages/2001-wind-sutra>.
- Prav Pillay. "Approach to Art." Accessed 8 September 2022.
<https://www.pravpillay.net/pages/approach-to-art>.
- Purring Tiger Collective. "MIZARU- Installation/Performance." Accessed 22 September 2022. <http://www.purringt.com/#/mizaru/>.
- Rahme, M. *More Than Music: The Lived Experiences of Communities Developed Through Music Festivals*. 2020. ProQuest Dissertations & Theses Global. (2443654175). <http://login.ezproxy1.lib.asu.edu/login?url=https://www-proquest-com.ezproxy1.lib.asu.edu/dissertations-theses/more-than-music-lived-experiences-communities/docview/2443654175/se-2?accountid=4485>.
- Ramey, Heather Lee. "Performing Black Rock City: Theatre of Affect and Burning Man." Doctoral diss., University of California, ProQuest Dissertations Publishing, 2014.
- Richardson, Neil. "Corporate Social Responsibility or Sustainability in Music Festivals." *International Journal of Organizational Analysis (2005)* 27, no. 5 (2019): 1257–1273.
- Rabin, Carol Price. *A Guide to Music Festivals in America*. Stockbridge, Mass.: Berkshire Traveller Press, 1979.
- Rahme, Madeline. "More Than Music: The Lived Experiences of Communities Developed Through Music Festivals." MA thesis, University of Denver, Denver, 2020, ProQuest Dissertations & Thesis Global.
- Rau, Nate. "Bonnaroo Ticket Sales Drop by 28,000, Hitting All Time Low." *The Tennessean*, 14 July 2016.
<https://www.tennessean.com/story/money/2016/07/14/bonnaroos-ticket-sales-plummet-28000/87003736/>.

- Ray, Michael. "Bonnaroo Music and Arts Festival." *Britannica*, 10 March 2011, <https://www.britannica.com/art/Bonnaroo-Music-and-Arts-Festival>.
- Robins, Becki. "Messed Up Things at Woodstock." *Grunge*, May 17, 2018. <https://www.grunge.com/123016/messed-up-things-woodstock/>.
- Rohrmeier, Kerry D., and Paul F Starrs. "The Paradoxical Black Rock City: All Cities Are Mad." *Geographical Review* 104, no. 2 (2014): 153–173.
- Rohrmeier, Kerry D., and Francine Melia. "Welcome to Black Rock City: Ephemeral Homes, Built Environments, and Participatory Negotiations." *Berkeley Planning Journal* 25, no. 1 (2012).
- Ryan, Patrick. "Bonnaroo Kicks Off Today." *USA Today*, 12 June 2014. <https://archive.ph/20140616215810/http://www.wbir.com/story/entertainment/events/2014/06/12/bonnaroo-kicks-off-today/10375231/>.
- Sada, Donald W, Christopher Rosamond, and Kenneth D Adams. "Effects of Recreational Use on Branchiopod Egg and Ehippia Density, Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area, Nevada, USA." *Journal of Crustacean Biology* 33, no. 2 (2013): 286–292.
- Salary Expert. "Cost of Living in Manchester, Tennessee, United States." Accessed 29 November 2021. <https://www.salaryexpert.com/cost-of-living/united-states/tennessee/manchester>.
- Savage, Patrick E., Psyche Loui, Bronwyn Tar, Adena Schachner, Luke Glowacki, Steven Mithen, and W.T. Fitch. "Music as a Coevolved System for Social Bonding." *Behavioral and Brain Sciences* 44, (2021):22-59.
- Scaggs, Austin. "Bonnaroo 2009: Phish, Bruce, MGMT, Beasties Rock Wildest Bonnaroo Ever." *Rolling Stone*, 2009: 37–36.
- Scheff, Jonathan. "Green Burning Man." *Scientific American* 297, no.3 (2007): 34-.
- Schwartz, Carly. "Why Burning Man's New Nonprofit Status Actually Matters." *Huffington Post*, 3 March 2014. https://www.huffpost.com/entry/burning-man-nonprofit_n_4899405.
- Shah, Neil. "Don't Believe the Hype: Fyre Festival Flops; Organizers Cancel Music Event That Cost up to \$250,000 a Person in the Bahamas." *The Wall Street Journal. Eastern Edition*. New York, N.Y: Dow Jones & Company Inc, 2017.

- Shev, A.B., D.L DeVaul, D. Beaulieu-Prévost, S.M. Heller, and the 2019 Census Lab. "Black Rock City Census." Accessed 27 September 2022. <http://blackrockcitycensus.org/sociodemo.html#ethnicity>.
- Simmons, Natasha A. Bonnaroo Lifestyles: Planet Roo. *Bowling Green Daily News*, 18 June 2019. https://www.bgdailynews.com/news/bonnaroo-lifestyles-planet-roo/article_dcede7ec-91e3-11e9-b79b-f35a534db434.html
- Skyhook. "Foot Traffic Analysis of Bonnaroo Music Festival 2018." 18 June 2018. <https://www.skyhook.com/blog/what-foot-traffic-analysis-reveals-about-bonnaroo-music-festival>.
- Sowers, Nick. "Soundscapes: Burning Man." *Places (Cambridge, Mass.)*, no. 2011 (2011). <https://placesjournal.org/article/soundscapes-burning-man/>.
- Staley, Elissa. 2013. "Music Festival Management: An Exploration of Sustainable Events and Business Models." Order No. 1549137, American University.
- Stettler, Stephanie L. Sustainable Event Management of Music Festivals: An Event Organizer Perspective. Ph.D. diss., Portland State University, 2011.
- Stewart, Karen Ann. "In Dust We Trust: A Narrative Journey into the Communal Heart of Public Art at the Burning Man Festival." PhD dissertation, Arizona State University, Tempe, 2010.
- Sustainablog. "Bonnaroo: The (Greener) Summer Music Festival." Accessed September 30, 2021. <https://sustainablog.org/articles/bonnaroo-the-greener-summer-music-festival/>.
- Templeton, Brad. "Burning Man's Green Man Theme Failed- What About the American Dream?" Brad Ideas, 11 September 2007. <https://ideas.4brad.com/burning-mans-green-man-theme-failed-what-about-american-dream>.
- The Tennessean*. "How Many People Live in Manchester City, Tennessee." Accessed 29 November 2021. <https://data.tennessean.com/census/total-population/total-population-change/manchester-city-tennessee/160-4745500/>.
- Titon, Jeff Todd. 2018. "Ecomusicology and the Problems in Ecology." *Musicultures* 45 (1-2): 255-64.
- Thomsen, C., and S.O. Idowu , N. Capaldi, L. Zu, A. D. Gupta. (eds.) "Sustainability (World Commission on Environment and Development Definition)." *Encyclopedia of Corporate Social Responsibility*. Berlin: Springer, 2013. https://doi.org/10.1007/978-3-642-28036-8_531.

- Thomson, Rex. "Bonnaroo Kicks Off with Stellar Sets from Vulfpeck, Con Brio, Papadosio, and More." *Live for Live Music*, 10 June 2016.
<https://liveforlivemusic.com/features/reviews/bonnaroo-kicks-off-with-stellar-sets-from-vulfpeck-con-brio-papadosio-more/>.
- Toomistu, Terje, and Jukka-Pekka Heikkilä. "Transformation through Connection? Insights from a Pilot Study of Story Sharing Cubes at Burning Man Events." *Dancecult: Journal of Electronic Dance Music Culture* 12, no. 1 (2020).
<https://dj.dancecult.net/index.php/dancecult/article/view/1171/999>.
- U.S. Forest Service. "Fire Effects on the Environment." Accessed 27 September 2022.
<https://www.fs.usda.gov/pnw/page/fire-effects-environment>.
- U.S. Census Bureau. "Geographic Identifiers: 2010 Census Summary File 1 (G001): Manchester City, Tennessee." Accessed 3 December 2021.
https://archive.ph/20200213053616/http://factfinder.census.gov/bkmk/table/1.0/en/DEC/10_SF1/G001/1600000US4745500.
- U.S. Census Bureau. "Population and Housing Unit Estimates." Accessed 3 December 2021, <https://www.census.gov/programs-surveys/popest/data/tables.2019.html>.
- Van Lenning, Ryan. "Top 5 Music Festivals that are Going Green." *PlanetSave*, July 9, 2009.
- Van Oosten, Jim, Ioannis Lampropoulos, Lukas Weimann, and Wilfried van Sark. "Optimal Design and Operation of Temporary Power Installations: Case Study on CO2 and Cost Savings for Outdoor Festivals in the Netherlands." *Journal of Urban Planning and Development* 147, no. 3 (2021): 1-6.
- Vrabel, Jeff. "Bonnaroo's Top Ten Moments." *Billboard*. 15 June 2009.
<https://www.billboard.com/music/music-news/bonnaroos-top-ten-moments-268368/>
- Waddell, Ray. 2004. "Bonnaroo!" *Billboard* 116 (26) (Jun 26): 1-1, 90.
- Waddell, Ray. "Co-founders, Superfly Presents: Jonathan Mayers & Richard Goodstone: the Bonnaroo Titans on Transcending their Hippie Roots and Why it was Time to Team with Live Nation." *Billboard* 127, no. 17 (Jun 13, 2015): 12-13.
- Waddell, Ray. "Bonnaroo Seeks Wider Lineup In 2005." *Billboard* 116, no. 51 (December 18, 2004): 6-59.

Waddell, Ray. "Live Nation Buys into Bonnaroo, Doubles Down on Festivals." *Billboard* 127, no. 13 (May 09, 2015): 12.

Wax, Buckeye. "Secret GriZ b2b CHERUB Set – Bonnaroo 2016 Campgrounds." 10 December 2016. Video, 3:24.
<https://www.youtube.com/watch?v=ADgykVFvh0E>.

Weinstein, Daniel. "Singing and Social Bonding: Changes in Connectivity and Pain Threshold as a Function of Group Size." *Evolution and Human Behavior* 37, no. 2 (2016): 152-158.

Wenzel, Patti. "Festival Season: Four Days at Bonnaroo." *ThirdCoastDaily.com*, 12 June 2012.
<https://web.archive.org/web/20130527013149/http://thirdcoastdaily.com/2012/06/festival-season-four-days-at-bonnaroo>.

Wharton, Mike. "Bonnaroo." *Pro Lights & Staging News* 18, no. 7 (2017): 36–.

Wigdor, Andrew. "RIP Bonnaroo Arch: Landmark Burned, Dismantled Due to 'Structural Issues.'" *The Tennessean*, 11 June 2019.
<https://www.tennessean.com/story/entertainment/music/bonnaroo/2019/05/21/bonnaroo-arch-fire-manchester-festival-landmark-burns-down/3750764002/>.

The Wounded Messenger. "Bonnaroo Preview: Ben Sollee." 3 June 2009.
<https://woundedmessenger.wordpress.com/2009/06/03/bonnaroo-preview-ben-sollee/>.

Yeganegy, Roxanne. "The Politics of Participation: Burning Man and British Festival Culture," PhD diss., University of Leeds, 2012.
<http://etheses.whiterose.ac.uk/6759/>.

Youtube. "Nine Inch Nails 2009-06-13 Manchester, Bonnaroo Music Festival - Full Show - NIN Live Archive." YouTube. 14 March 2020.
<https://www.youtube.com/watch?v=MQuiiIkI2q0>.