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Events-based small-town tourism: Exploring the South African tourism sector under environmental and climate challenges

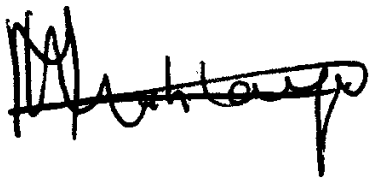
Dissertation submitted to the Faculty of Science in fulfilment of the requirements of the degree Master of Science.

Mazozo Nomthandazo Mahlangu
1085987

March 2022

Declaration

I, Mazozo Nomthandazo Mahlangu (1085987), declare that this thesis is my own, unaided work. It is being submitted for the degree of Master of Science at the University of the Witwatersrand, Johannesburg, South Africa. It has not been submitted previously for any other degree or examination in any other university.



Mazozo Nomthandazo Mahlangu

Signed on the ___25___ day of_____July_____2022.

Abstract

Tourism is one of the fastest emerging industries in the world which has contributed substantially to South Africa's Gross Domestic Product (GDP) throughout the years. Tourism is an integral part of the South African economy and culture, at the national and local scale. This study examines small-town tourism and the effect that events-based, wedding, nature- and phenology-based tourism has on the success of the tourism sector of Chrissiesmeer, a small town located in Mpumalanga, South Africa. This study aims to explore climate- and phenology-related threats to tourism in Chrissiesmeer, through the town's tourism sector and its reliance on climate and phenology, gauging the perceptions tourists and tourism operators hold regarding climate-related threats to tourism, and lastly, assessing the predictability and sustainability of tourist activities and annual events at Chrissiesmeer. This study takes on a mixed-methods approach that employs the use of both qualitative and quantitative data and the triangulation of results was a tool used to integrate and analyse each form of data collected to reveal common themes and patterns. Key-informant semi-structured interviews, comprehensive tourist questionnaires, and online reviews analysis were tools used to engage with the experiences of tourism in Chrissiesmeer and climate-related perceptions of former tourists and tourism operators. Image analysis of Instagram posts was conducted to compile a comparative contemporary phenological record that was compared to phenological records to provide estimated predictions of future phenological patterns of the plant and animal species identified in the study. The results demonstrate a clear link between events-based, small-town and nature-/phenology-based tourism. Nonetheless, many aspects of the tourism sector at large have some degree of dependency on the natural environment, climate, and plant or animal taxa. Thus, it is of great importance that the Chrissiesmeer tourism sector considers the potential and present effects of environmental and climate change because the majority of the most lucrative festivals, events and tourism activities are dependent on the phenological phases of certain plant and animal species. With shifting phenology being the most sensitive and earliest response to increasing global temperatures, tourism operators and small businesses in Chrissiesmeer must prepare adequately and adapt to these imminent effects, to maximize predictability and the sustainability of the key elements of the town's tourism sector.

Dedication

For my beautiful mother, Tebello Motsamai-Mahlangu,

and my beautiful godson, Thoriso Zion Banda.

Acknowledgements

First and foremost, I would like to thank my supervisor, Professor Jennifer Fitchett, for her constant support and guidance throughout my postgraduate journey. I have great respect for your work ethic, your leadership style, the work you do and the never-ending kindness you extend to others. I will cherish these years and all the invaluable lessons you have taught us forever.

I would like to thank all the participants of this study. Your participation is invaluable! Thank you for taking the time and making the effort to be a part of this study.

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Thank you to all of my family and friends, who walked along with me on this journey. To all those still with us and all those lost, thank you for your love. Thank you for your presence and support, for checking in and for staying up late. For all the laughs and hugs. The reassuring motivational speeches that rivalled TEDx talks. Thank you for being there. Thank you for being here and thank you for allowing me to share this wonderful, difficult and beautiful life with you all.

To my beautiful mother, there are no words to express the depth of my gratitude. Thank you for the love and support you've abundantly shared throughout my life and academic journey. I love you with all my heart and will love you always. Thank you, ma. I am eternally grateful.

If it were not for prayer, this paper would not exist. Thank you, God, for your everlasting love!

Girl, we did it!

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List of Acronyms

Gross Domestic Product – GDP

International Union for Conservation of Nature - IUCN

Local Economic Development – LED

United Nations Council on Trade and Development - UNCTAD

List of Abbreviations

Phenological Phases - phenophases

Minimum Temperature - T_{min}

Maximum Temperature - T_{max}

Unit of Measurement

Kilometre – km

Millimetre – mm

Degrees Celsius - °C

1. Introduction

Tourism is a fast-emerging global industry and has contributed to 8.6% of South Africa's national GDP in 2018 (Balmford *et al.,* 2009; Kontsiwe and Visser, 2019; Friedrich *et al*., 2020). Small-town tourism is situated in rural areas and it relies on the resources a town or village has to showcase as potential tourist attractions (Halseth and Meiklejohn, 2009; Hoogendoorn and Visser, 2015; Rogerson, 2016). Small-town tourism can revitalise rural settlements and contribute to rural development (Rogerson, 2016; Kontsiwe and Visser, 2019). In South Africa, small-town tourism is highly dependent on the natural environment as its primary tourist attraction (Rogerson and Wolfaardt, 2015; Friedrich *et al.*, 2020). One form of nature-based tourism is tourist activities that are based on plants and animals. This is referred to as phenology-based tourism (Gibb and Nel, 2007; Mahlangu and Fitchett, 2019). The combined use of natural spaces, the built environment and culture and heritage can diversify small-town tourism markets, which has the chance to develop and enhance cultural tourism, pit-stop travelling and the comfort for tourists who prefer a wide variety of tourist activities (Gibb and Nel, 2007; Sakurai *et al*., 2011). Public and private events, including festivals and weddings, create reasons for tourists to visit and revisit otherwise unknown or less popular destinations (Rogerson and Wolfaardt, 2015). This is referred to as events tourism (Getz, 2008).

Tourism, as an integral part of a town's economy and culture, contributes to the identity-making of the town as a place (Ferreira, 2007). The cultural significance of a town is based on its history and the identity the town has built through its traditions and economic activity. Cultural significance can be created through reoccurring tourist events, which cultivate

meaning for locals and visiting tourists over time (Sakurai *et al*., 2011, Pavlakovič *et al*., 2016). The events can be a source of entertainment, cultural celebrations or a chance to visit family or friends (Rogerson, 2016; Pavlakovič *et al*., 2016). For small-town tourism suppliers, tourism jointly translates as a source of income/livelihood and a celebration of their heritage (Ferreira, 2007; Sakurai *et al*., 2011).

Small towns, across the world, often adopt tourism as a form of developing their local economies and these towns can find success for a variety of reasons (Halseth and Meiklejohn, 2009; Kontsiwe and Visser, 2019; Donaldson, 2021). Tourism in rural areas over the years has grown into a niche tourism market of tourists who prefer to travel to small towns particularly to escape urban residential life. Small town tourism is affordable and easily accessible to a growing market, all the while holding great potential to develop and revitalise declining rural areas (Gibb and Nel, 2007; Halseth and Meiklejohn, 2009; Kontsiwe and Visser, 2019). Small town tourism is most lucrative when a rural area actively diversifies its tourism sector, where there are multiple points of interest rather than one vulnerable key tourist attraction. An example of a small town which has embraced diversification is Chrissiesmeer.

Chrissiesmeer is located in what is well known as the Mpumalanga 'Lake District of South Africa' (Alexandre and van Vuren, 2008). The town is a popular wedding destination and is known for its rich pre-colonial and Anglo-Boer history, camping facilities, lakes and pans, and annual phenology-based and social events (Chrissiesmeer, 2015; Getaway, 2011).

In connection to being a town of great historical and cultural importance, it is well-known for its diverse biodiversity, with plant and animal taxa that include a larger range of indigenous wildflowers, bird and frog species. Nature-based tourism is the use of natural environments

and their ecosystems as the primary asset for tourist facilities, amenities and activities (Balmford *et al.,* 2009; Arneggar *et al.*, 2010; Buckley, 2012; Tao *et al.,* 2015). Phenology is the study of the biological responses of fauna and flora to seasonality (Sakurai *et al.*, 2011; Mahlangu and Fitchett, 2019), and what differentiates this form of tourism from nature-based tourism is the sensitivity to time and location. Phenology-based tourism presents any area with a robust ecosystem because biodiversity is location-specific and thus, this increases the competitive edge of that region (Roger and Donaldson, 2015; Kontsiwe and Visser, 2019; Mahlangu and Fitchett, 2019). This is an opportunity Chrissiesmeer has exploited in its favour throughout the years and using annual events to maximise the optimum points of plant and animal phenological phases.

Events-based tourism is a form of special-interest travel, where an event is the key point of interest and purpose for travel and often provides tourist destinations with marketing opportunities and economic development (Getz, 2008; Kontsiwe and Visser, 2019). This translates as hosting both public events, such as phenology-based events and private events, such as weddings. Globally, it has become a growing trend for bridal couples to get married in wedding destinations which are not close to their place of residence (Rogerson and Wolfaardt 2015; Mahlangu and Fitchett, 2019). This is known as wedding tourism, which is another form of tourism Chrissiesmeer has incorporated into its tourism sector.

The relationships between small-town tourism, nature-based tourism and wedding tourism have become the foundation of the Chrissiesmeer tourism sector. However, each form of tourism is underpinned by events-based tourism and the natural environment, which have contributed significantly to the success of each sector. Rising temperatures and climate change have the potential to put the sustainability of the Chrissiesmeer tourism sector at risk

(Sakurai *et al*., 2011; Mahlangu and Fitchett, 2019). It is thus of interest to examine the current and future effects of climate change and the small town's preparedness and capability to combat and mitigate these impacts.

As this research was conducted within the context of the COVID-19 pandemic, it is imperative to consider the effects of the global pandemic both on this study and the tourism sector at the heart of this study. This study will go further to look at the impact of the COVID-19 pandemic on the Chrissiesmeer tourism industry while re-framing this study to fit the current context.

1.1. Rationale

With the increase in global temperatures and environmental change, climate change poses a threat to the consistency and the overall sustainability of events- and phenology-based tourism (Balmford *et al.,* 2009; Arneggar *et al.*, 2010). For small towns, this translates as a threat to local economies and the businesses these economies are comprised of (Gibb and Nel, 2007; Samurai *et al.*, 2011). It is important to consider the potential effects of climate change and its potential extent of impact as a critical first step to developing adequate and effective mitigative strategies against these impacts (Buckley, 2012; Dube and Nhamo, 2020). This study aims to examine the current situation of the abovementioned tourism sectors, by assessing tourism at Chrissiesmeer from a multi-dimensional perspective.

1.2. Study Aim and Objectives

This study aims to explore climate- and phenology-related threats to tourism in Chrissiesmeer, Mpumalanga. The objectives of this study include:

1. Understanding the current context of tourism at Chrissiesmeer and its reliance on climate and phenology,
2. Assessing tourist and tourism operators' perceptions of climate-related threats to tourism,
3. Assessing the predictability and sustainability of tourist activities and annual events at Chrissiesmeer.

1.3. Structure of the Dissertation

The literature review (Chapter 2) of the study is based on the literature on niche tourism sectors, which include events-based tourism, small-town tourism, nature- and phenology-based tourism, and wedding-based tourism. Secondly, the relationship between nature and society is further discussed to assess the importance of nature- and phenology-based tourism. Lastly, literature on climate change in the form of shifting phenology will be explored to assist the relationship between tourism, phenology and the potential and current effects of climate change on both.

The study site (Chapter 3) of this research study is Chrissiesmeer, Mpumalanga, South Africa. In this section, a description of the location, climate and ecology of this area will be outlined. This will be accompanied by a historical and cultural outline of the town's history as it pertains to the current tourism sector.

The methodology (Chapter 4) outlines the methodological approaches taken to address the aims and objectives of this study. This study takes on a mixed-methods approach that employs the use of both qualitative and quantitative data. The triangulation of results was a tool used to integrate all forms of data collected to reveal common themes and patterns (Flick, 2004).

The qualitative methods include key-informant semi-structured interviews, tourist questionnaires, and online reviews analysis. The qualitative data is based on image analysis of Instagram posts to compile a comparative contemporary phenological record (Fitchett and Fani, 2018), that would be compared to phenological records to provide estimated predictions of future phenological patterns of the plant and animal species identified in the study.

The results section (Chapter 5) will outline the findings of the methodological tools used to address the aims and objectives of this study. This section will be discussed each methodological process which includes, key-informant semi-structured interviews, tourist questionnaires, online reviews analysis and lastly image analysis. This section will be based on the semantic analysis of all the data collected to expose common themes under each stage of the data collection process. An amalgamation of these themes will be further discussed in the discussion section.

The discussion section (Chapter 6) is the interpretation and the analysis of the findings of the study against the pre-existing literature that makes up the contextual background of this study. The relationship between events-based tourism and small-town tourism is analysed further because the data reveals deep connections between the success of tourism in Chrissiesmeer and the events that are hosted in this area. Furthermore, nature- and phenology-based tourism and its relationship with events-based tourism are assessed to determine the vulnerability of Chrissiesmeer's phenology-based festivals to the effects of climate and environmental change. Through the perceptions that tourists and tourism operators hold regarding nature and climate change to assess the importance of nature in the Chrissiesmeer tourism sector. Furthermore, this allows an assessment of the predictability

and the sustainability of nature- and phenology-based events in the future of the tourism sector. Lastly, a future outlook for the phenological phases of the plant and animal species identified in this study will be provided, based on calculated predictions and literature, to determine the predictability of events and the overall sustainability of the tourism sector in Chrissiesmeer.

The conclusion will provide a synthesis of the research questions, aims and objectives, methodological approaches, key findings and overall analysis of this study. This will include an assessment of the limitations of this study and future research opportunities. All will be followed with a reference list of all sources reviewed and the tools used throughout this study in the annexure section.

2. Literature Review

2.1. Introduction

This literature review aims to discuss the founding literature that will contextualise this study. This study aims to examine and understand the tourism sector in Chrissiesmeer, the perceptions of tourism operators and tourists on climate-related threats, the potential effects of climate change on tourism in Chrissiesmeer and lastly the predictability and the sustainability of the tourism sector in the face of climatic threats. Therefore, this literature review will include a discussion on small-tourism and events-based tourism as two niche forms of tourism particular to the scope of this study. As part of this, this study will examine wedding tourism as a key form of tourism particular to the study site. It will be through this analysis that we understand the relationship between small-town tourism and events, in particular how events contribute to the success of small-town tourism. Literature on the relationship between nature and society will also be reviewed to examine trends in tourist engagements with nature and natural environments throughout the year, furthermore highlighting the importance of natural environments to society and the tourism industry. Finally, this literature review will look at the current and potential effects of climate change on the tourism industry at Chrissiesmeer, particularly the threat of shifting phenology.

2.2. Niche Tourism: Small-Town; Event-Based and Wedding Tourism

Tourism is the movement of people from their place of residence to a destination of their choice for leisure or work-related purposes over a period of between 24 hours to a year (Steyn

and Spencer, 2011). This review will examine niche tourism sectors such as small-town tourism, event-based tourism, wedding tourism and nature-/phenology-based tourism. These forms of tourism are the most applicable as this study attempts to analyse and understand the workings of the tourism industry of Chrissiesmeer, Mpumalanga. Niche tourism is a form of tourism based on "special interests, culture of activity-based tourism involving [a] small number of tourists in authentic settings" (Rogerson and Rogerson, 2021b, 1135). The key difference between niche tourism and traditional mass tourism is the quantity of tourism visitation and participation. Mass tourism is based on large numbers of tourists that either visit a particular destination or participate in a tourist activity, which can often be a staged execution of tourist products. On the contrary, niche tourism appeals to a specific group or community of tourists, whether that be a unique location or social event or specified and particular interest. Niche tourism attracts a far smaller group than mass tourism, noting that authenticity is crucial for the success of each niche tourism sector (Rogerson and Rogerson, 2021a). The term 'special interests' can be made up of one or more of these four components: psychological, emotional, cultural and personal development. Rogerson and Rogerson (2021a) write that these components drive consumer motivations and contribute to the attractiveness of certain activities, products and destinations that pertain to a particular niche interest. The psychological element is based on the need for tourists to unwind and relax when on holiday. The emotional is based on nostalgia and the need to deeply connect with tourism on an emotional level (Pavlakovič *et al*., 2016). The cultural aspect is the practice of culture and traditions, which can include sightseeing key cultural points of interest. Lastly, personal development is based on developing one's skill set or knowledge capacity (Rogerson and Rogerson, 2021a).

Over the past few years, literature on niche tourism has become a growing topic of discussion in academia which mirrors the growth of the niche tourism sector in the tourism industry at large. Ali-Knight (2010) argued that niche tourism was a response to changing tourist preferences and demands, which have become more sophisticated and particular in interest over the years. Over the past few years, Rogerson (2021) argues that niche tourism is a solution to address the growing rate of customer anxiety that has been associated with the widespread COVID-19 global pandemic. The global pandemic has changed the landscape, safety and comfort of tourism at a variety of different levels. Authors believe that tourists will look to niche tourism as a means of evolving with these changes. Niche tourism likewise allows destinations to hone in on their unique characteristics and to use those as key tourism offerings and products to attract specific markets (Halseth and Meiklejohn, 2009). This details the emphasis on localism in niche tourism when considering the need for specific and authentic products and services. Robinson and Novelli (2005) argue that some of these tourism offerings can be highly place-specific and contribute to distinguishing certain areas as niche destinations. In the international scene, a few of the top niche tourism sectors include gastronomic (food and beverage) tourism (Sidali *et al*., 2015; Byrd *et al.*, 2016); ecotourism (Place, 1991); cultural, historical and nostalgia tourism (Sakurai *et al.*, 2011; Pavlakovič *et al*., 2016); wellness tourism (Malik, 2018); art, music and creative tourism and ghetto tourism (Rogerson and Rogerson, 2021b). In South Africa, the Department of Tourism (2017; 16) stated that they had hoped to "rapidly and inclusively grow tourism economy that leverages SA competitive edge in nature culture and heritage". Nature-based, cultural and historical tourism are niche markets most suited to the South African tourism economy based on the South African landscape and the country's extensive historical and cultural scope. Rogerson and Rogerson (2021b) detail the full landscape of niche tourism in South Africa as

examined through a variety of different studies conducted on South African tourism over the years. This study will look at small-town tourism, events-based tourism, wedding tourism and nature-based tourism to examine Chrissiesmeer's tourism sector, its tourism sectors opportunities and threats that will contribute to an assessment of the town's sustainability in the future.

2.2.1. Small-Town Tourism

Small-town tourism is a fairly neglected topic. The same can be said about small towns themselves with authors in South African literature arguing that very little attention has prioritised the development of rural towns in policymaking, an argument shared in the international field (Atkinson, 2009; Donaldson, 2021). Small town tourism is defined as short-term travel to rural areas for leisure, business or to visit friends and relatives (VFR). Throughout academia, nature-based tourism and second-home gentrification have led the discussion on small-town tourism destinations (Halseth and Meiklejohn, 2009; Kontsiwe and Visser, 2019). Hill *et al.* (2006) argue that the primary goal of tourism-based development should be to uplift the poorest portion of each society and incorporate rural populations into the mainstream economy (Dube and Nhamo, 2020). Although small-town tourism has been identified as a means of achieving local economic development (LED), planning and strategic frameworks lack effective and practical methods for implementation (Hill *et al.,* 2006; Gibb and Nel, 2007; Halseth and Meiklejohn, 2009).

Small town decline has been attributed to economic shifts and changes over the past few decades. Rural areas in the global North and South transition away from primary economic activities to secondary economic growth, where the decline of agriculture, fishery and

forestry is replaced by industrialisation driven by the economic focus shift of neighbouring urban centres (Long and Lane, 2000). In rural North America, Asia and Europe this is seen through the decline in farming profitability, decrease in farmland prices and the degradation of infrastructure and service provision in town centres (Long and Lane, 2000). Small towns globally were affected by economic restructuring to fit urban economic modes of production and to combat the process of rural-urban migration (Donaldson, 2021). While over time, the effects of perpetuating poverty levels in urban areas have contributed to the outmigration of a skilled urban workforce, which authors argue is the potential cause of the growth of tourist towns (Rogerson and Visser, 2007; Donaldson, 2021).

Small-town tourism is defined by Halseth and Meiklejohn (2009) through four aspects. The first is the use of one or a combination of a town's local assets, which can either be the surrounding natural environment, cultural or historical (Sakurai *et al.*, 2011; Kontsiwe and Visser, 2019). Small-town tourism is practised across the world in some form of nature-based, cultural and or historic tourism because these elements are often the key tourism offerings small destinations have at their disposal (Kontsiwe and Visser, 2019). The local assets are the key elements of implementing tourism as a part of a small-town local economy, as this is the basis for the town's tourism offering (Halseth and Meiklejohn, 2009). Rogerson (2014) argues that maximising the opportunities a location has for tourism contributes to the potential economic growth of local economies. This, however, requires adequate management of the local asset and tourism offering and the maintenance of competitive advantage for LED strategies to be successful through small-town tourism (Binns and Nel, 2002; Kontsiwe and Visser, 2019). Cater and Jones (1989, in Halseth and Meiklejohn, 2009) discussed the concept of managerialism which speaks to the role key stakeholders play in managing and distributing

opportunities in tourism. The mismanagement of said assets has reportedly contributed to the decline of small-town tourists and will continue to do so through a variety of, and often place-specific, challenges small towns across the world and in those in South Africa face (Kontsiwe and Visser, 2019).

The second aspect is the need for accessibility to the town which will allow a 'critical mass' (Halseth and Meiklejohn, 2009, 296). In this instance, the authors argue that a tourist destination needs to be accessible to reach a population threshold that would contribute to the profitability of a tourist product and service (Halseth and Meiklejohn, 2009). “City’s countryside” is a model coined by Bryant *et al.* (1982, in Halseth and Meiklejohn, 2009) that details the proximity of small towns to their urban counterparts which “uses travel distance and time from major urban centres as the key to demarcating the limit of an intensive weekend and seasonal use for tourism and recreation” (Halseth and Meiklejohn, 2009; 304). Kontsiwe and Visser (2019) conducted a study on Aliwal North in the Eastern Cape which uses its proximity to the N6 route (“Friendly N6 Route”) as a marketing strategy to incite tourist visitation. This is a strategy based on using the small town’s locality and proximity to the N6 as a positive through clear communication that the small town is accessible. The third key aspect is related to ensuring that visitors have easy access to the town, even if at a distance from their original location (Halseth and Meiklejohn, 2009).

The fourth element is about the vulnerability of small towns to challenges, either external, internal or a combination of both. This pays attention to the challenges small towns face and the risk to their local economies, which can be external, that completely minimise a small town’s ability to adapt to such threats (Halseth and Meiklejohn, 2009). This is discussed across literature on small-town tourism globally and in the South African context. Some internal

challenges in small-town tourism are created by weaknesses in the relationship between tourism developers and stakeholders, residents, and often local and international governmental forces. In studies conducted on small-town tourism in the global north, one of the key hindrances to rural development and diversification was the pushback of residents in said areas (Long and Lane, 2000). Stakeholder relationships are a critical concern in small-town tourism in South Africa as there is a lack of trust and confidence in local municipalities. This appears to be a shared struggle among small towns in South Africa (Kontsiwe and Visser, 2019). This is due to the lack of tourism development support and service provision and a breakdown in local stakeholder relationships (Kontsiwe and Visser, 2019). The management of tourism assets and the development of local tourism sectors depends on stable stakeholder relationships. Without these relationships, small-town tourism faces the threat of declining due to a lack of constructive and competitive development (Rogerson, 2002; Halseth and Meiklejohn, 2009; Kontsiwe and Visser, 2019).

The COVID-19 global pandemic was an excellent example of how a large-scale external force, being an international occurrence, could drastically affect whole small-town economies (Rogerson, 2021b). The external forces Halseth and Meiklejohn (2009) discuss include "international events and affairs, weather and seasonality…public policies and investment" (296). The COVID-19 pandemic changed the landscape of global and local tourism industries across the world, with the global economy suffering an estimated loss of 2.4 trillion US Dollars in 2020 (UNCTAD, 2021). Each of the estimates provided by the United Nations Council on Trade and Development (UNCTAD) for the potential losses the global tourism industry would incur in the year 2021 all show that developing countries would experience the most severe impact, with South Africa scheduled to experience a -8.1% loss of the country's Gross

Domestic Product (GDP) (UNCTAD, 2021). Small-town tourism could face similar economic losses, through climate change, as the losses experienced throughout the COVID-19 pandemic. The COVID-19 global pandemic has been a live example of the impact of global stressors on the tourism industry, at the global and the local level (Rogerson and Rogerson, 2021b). Thus, small-town tourism sectors must prepare and adequately plan to strengthen their adaptive capacity in response to growing climate and environmental challenges (Steyn and Spencer, 2012; Fitchett *et al*., 2016).

2.2.2. Events-Based Tourism

Events-based tourism is a form of special-interest travel, where an event is the key point of interest and purpose for travel (Getz, 2008). Events are spatial-temporal occurrences and are optimised by adequate and effective event management and execution. Laing (2018) argues that events-based tourism has overshadowed discussions about events management, and throughout literature since the late 1980s, has focused on analysing events through a tourism lens. Events management concerns itself with the organisation, administration, and execution of an event, (Gibb and Nel, 2007). Tourism management focuses on understanding customer motivations to travel, to optimise and develop tourism sectors, destinations and key points of interest (Akgunduz and Coşar, 2018). The intersection between these two pillars is events-based tourism. Events-based tourism seeks to exploit customer motivation associated with attending an event as the means of promoting travel and to particularly increase the destination visitation rates of the area where the event is being held to boost its tourism sector (Akgunduz and Coşar, 2018; Laing, 2018). As such, the focus moves from examining the complexity of events production and management to tourism development through events (Panyik, Costa and Rátz, 2011; Laing, 2018; Getz, 2008).

Events-based tourism has been identified in national and local policy frameworks as a lucrative opportunity to achieve LED through tourism development and an important component in maximising niche tourism opportunities in the economy (Getz, 2008). Events are planned with a specific theme and culture in mind and this creates a niche market within the process. In so doing, events are highly productive in marketing themselves and the destinations they are being hosted in, and oftentimes, the destination is not the primary attraction or the focus of the occurrence (Getz, 2008). Without events, destination marketing would solely rely on the area's own merit and the effectiveness of the destination's marketing strategy (Panyik *et al*., 2011; Rogerson and Rogerson, 2021a). Events target niche groupings associated with a particular culture and purpose and an event can increase tourist visitation through customer loyalty. This process is often an effective strategy to achieve visitation growth because events become the focus and concerns about the attractiveness of the destination become somewhat obsolete. Furthermore, the occurrence of events creates multiplier economic benefits effects, as tourists that visit a destination to attend an event rely on tourist goods and services provided in the area for sustenance and the enrichment and further enjoyment of their trip (Getz, 2008). It has been noted that events-based tourism plays a large role in tourism development (Getz, 2008).

Events can be categorised according to scale, including the social and cultural purpose and value (Getz, 2005). Scale refers to the spatial and temporal scope of an event and its capacity. Mega-events incur a high tourist demand, cover a larger geographical scope and are highly valued by the tourist (Getz, 2008, Fourie and Spronk, 2011). These include large-scale sporting events, such as World Cup sporting events (Fourie and Spronk, 2011). Smaller events that share similarly high levels of value are hallmark events (Getz, 2008). These events are "one-

time or recurring events of limited duration developed primarily to enhance the awareness, appeal and profitability of a tourism destination" (Richie, 1986, 2 in Getz, 2005). These include events such as Cherry Blossom Festivals in Japan, which contribute to the identity-making of the destination they are hosted in (Sakurai *et al.,* 2011). These events are deeply connected to their locality and hold value due to their cultural and community-based significance. Regional and local events are less dependent on the locality and are, thus, slightly more detached from destinations as are hallmark events, except in the case of community and culturally significant local events (Getz, 2005; Getz, 2008; Sakurai *et al.,* 2011).

These events can be planned public events which could be cultural, political, creative, educational, business or sport related. Alternatively, events can be private events, that are closed to the public (Rogerson and Wolfaardt, 2015). One of the more frequent forms of public cultural events is festivals. Festivals can range from a celebration of music, food, sports, culture and heritage, art, ideology, and community (Sakurai *et al.*, 2011; Donaldson, 2021). Certain events and festivals are associated with community values and identity building, as they tend to provide a sense of pride for residents and regular attendees of these events. Despite being held over a fairly short period, festivals can occur regularly and are often public events (Getz, 2008; Sakurai *et al.,* 2011). Although festivals are categorised as events, authors have distinguished between the two by mentioning that festivals are particularly concerned with a cultural experience and celebration that have a definitive social element and theme (Wilson *et al.,* 2017). Private events created micro-niche markets, such as wedding tourism (Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019).

2.2.2.1. Wedding Tourism

South Africa is a multicultural region with cultures that practise differing wedding traditions. It is important to note that this study refers to 'white weddings', as a homogeneous practice shared across the South African community (Mahlangu and Fitchett, 2019). White weddings encompass historical European wedding culture and traditions. These traditions are not inclusive of non-European cultural diversity, however, through globalisation, these weddings have become normalised as a standardised wedding option for bridal couples across the globe (Mupotsa, 2014). These wedding practices have evolved through history and lessened the significance and importance of the traditions originally practised. Furthermore, with development and the new interpretations of the white wedding globally, this has given room for white weddings to garner practices and blended experiences all incorporated into original wedding traditions and practices (Mahlangu, 2018). This has been primarily achieved through mainstream media over the past few decades. Globally, modern takes on white weddings have created trends which shape customer preferences (Rogerson and Wolaardt, 2015; Mahlangu and Fitchett, 2019). This chapter will look to understand how wedding tourism has become an emerging wedding trend in recent years.

Weddings are a symbolic milestone event during one's life. The ceremony and reception of a wedding mark the legal union between two persons and the celebration of the union by the gathering of family and friends (Mupotsa, 2014). According to the white wedding tradition, the bride wears a white or ivory dress and veil that symbolises the purity of the bride and the groom wears a suit or tuxedo. During the ceremony, the couple exchange vowels, rings and a ceremonious kiss to mark the union. Other key elements include cake cutting, the throwing of the bridal bouquet and the garter followed by celebration (Mupotsa, 2014). In South

African culture, it has become popular for African bridal couples to host two separate wedding events which often begin with a series of traditional ceremonies hosted at the couple's familial homes. These proceedings include lobola negotiations, cultural traditions particular to the cultural group in question and the official handing over of the bride to the groom's family (Mupotsa, 2014). The South African traditional wedding is typically followed by a white wedding. Authors have argued that this practice primarily occurs in critically contemporary and elitist social groups, however, mention that the practice of white weddings is growing in middle to lower socio-economic groups (Mupotsa, 2014; Rogerson and Wolfaardt, 2015).

Weddings that would typically be held in the bridal couple's place of residence historically in any society are no longer required to so do. Modern wedding practices are no longer culturally or traditionally location-specific, which allows bridal couples to get married anywhere in the world (Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019). Destination weddings have become a fast-emerging trend in wedding practices (The Wedding Academy, 2018). Destination weddings are wedding events hosted by bridal couples who choose to get married in a destination away from their place of residence (Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019). It is the purpose of travelling to attend a wedding, both for the wedding party and wedding guests. Wedding venues in their respective locations become a tourism asset and these areas can market themselves as wedding destinations through adequate and directed marketing.

Weddings are globally perceived as 'once-in-a-lifetime' events. Thus, wedding destinations are incentivised to provide a 'once-in-a-lifetime', unique experience for clients (Getz *et al*., 2012; Roger and Donaldson, 2015; Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019). This is a concept Roger and Donaldson (2015) refer to as Unique Selling Propositions.

Wedding venues are encouraged to produce a wedding package that rivals their competition and aligns with the bridal couple's personal preferences. The only portion a wedding venue can control is the former and to achieve a competitive edge, a wedding destination also needs an effective marketing strategy. To optimise their marketing strategy, wedding venues need to capitalise on their competitive advantage by maximising their natural and built assets. The more attractive a wedding venue is and the wider an audience it can reach, the more it is likely to increase profitability and its brand identity (Roger and Donaldson, 2015; Mahlangu and Fitchett, 2018).

Throughout the years, destination weddings have become incredibly popular through pop culture, mainstream media outlets and social media (The Wedding Academy, 2018). One of the leading themes in wedding tourism is the natural appeal of a wedding destination. Wedding tourism and wedding destinations are highly dependent on the natural environment to provide unique and scenic experiences for bridal couples (Seebaluk *et al.,* 2014). These wedding venues are usually located in areas surrounded by natural appeal to a certain degree, be it in terms of proximity to natural features such as beaches, water features, mountains, rural areas rich in vegetation or areas that have warmer temperatures (Rogerson and Wolfaardt, 2015). Some weddings are hosted in coastal areas, or honeymoon destinations such as Mauritius (Seebaluk *et al.,* 2014); gardens, orchards, forests, vineyards and farms (Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019), which address the preferences and consumer wants for this form of niche tourism (de Witt, 2006).

As a niche form of tourism, wedding tourism can contribute to the growth of tourism sectors, through the impactful work of niche tourism markets and how they contribute to destination branding and the identity-making process (Rogerson and Rogerson, 2021a). The successful

management of events can contribute greatly to the tourism sector of any location and convert any location into a notable destination through the identity-making process. Internationally, this has been seen through the success of wedding and honeymoon destinations such as Mauritius (Seebaluk *et al.*, 2014); the Mediterranean (Durinec, 2013); the Caribbean (Vidauskaite, 2015) and other popular island and coastal locations (The Wedding Academy, 2018). South Africa is in the initial stages of establishing wedding tourism as an integral part of the South African tourism industry but has experienced some success with small-town wedding tourism destinations such as Paarl, Franschhoek, Pretoria and Muldersdrift (Rogerson and Wolfaardt, 2015; Figure 2).

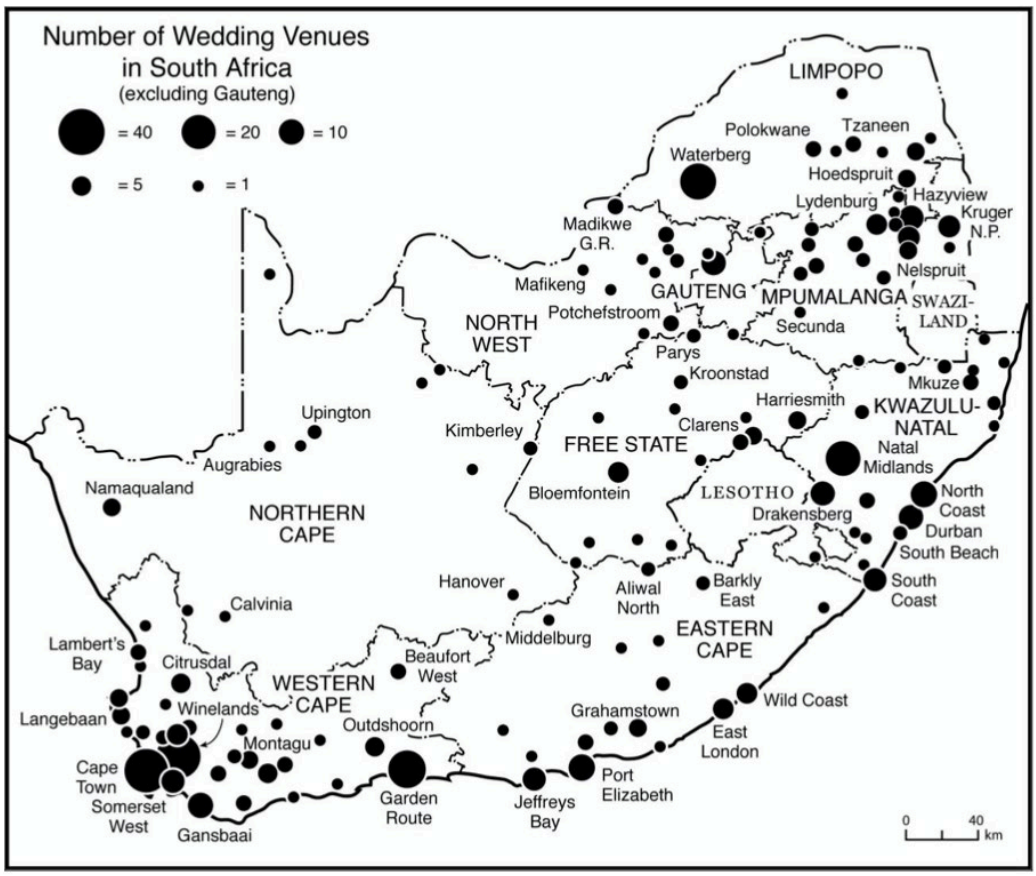


Figure 1 Locations of wedding venues in South Africa (After Rogerson and Wolfaardt, 2015).

Small towns can market themselves as wedding destinations to diversify their tourism sectors (Seebaluk *et al.*, 2014; Rogerson and Wolfaardt, 2015). The development of wedding venues that grow a reputable customer base will contribute to the growth of this identity (Rogerson and Wolfaardt, 2015). This process begins with the success of one wedding venue in a rural area. Events-based tourism has proven to be a lucrative sector, which could develop local communities and potentially create jobs and sustain declining small-town tourism when implemented and managed correctly (de Witt, 2006; Gibb and Nel, 2007).

2.3. Nature and Society: Interactions through Nature- and Phenology-Based Tourism

Nature-based tourism is a branch of tourism that is dependent on natural environments, as the main source for tourist activities and attractions (Balmford *et al.,* 2009; Arneggar *et al.*, 2010; Buckley, 2012; Tao *et al.,* 2015). In Southern Africa, nature-based tourism comprises 10% of the region's GDP (Kontsiwe and Visser, 2019), and "generate[d] roughly the same revenue as farming, forestry, and fisheries combined" pre-COVID (Balmford *et al.*, 2009, 1). Phenology-based tourism is tourism based on the optimal phases (i.e., blooming flowers) of the phenological patterns of plants or animals nature-based (Gibb and Nel, 2007; Mahlangu and Fitchett, 2019). These forms of tourism are based on the relationship tourists have with the natural environment, fauna and flora, because this niche market is driven by customer preferences, as is any niche market. The success of nature-based tourism globally reflects a large and growing interest in tourist participation. This chapter seeks to examine the importance of nature and natural environments to tourists, how and why tourists engage with nature and finally, the impact this relationship can have on global and local tourism industries.

Throughout literature, discussions around variations of nature-based tourism have branched off from its initial debates and definitions (Balmford *et al.,* 2009; Buckley, 2012). It is necessary to add that the scholars struggled to agree on a specific name for nature-based and eco-tourism during its inception and this has remained an area of contestation to this today (Balmford *et al.,* 2009). Nature-based tourism, which includes ecotourism, sustainable tourism and conservation/protected areas tourism, was primarily referred to as 'nature, eco- and adventure tourism' (NEAT) (Balmford *et al.,* 2009; Arneggar *et al.*, 2010). Furthermore, NEAT had not been identified as a recognisable market for a large portion of its inception. At the crux of it, nature-based tourism recognises that natural environments and the use of these environments, as well as all they encompass, as a key element and setting for tourist facilities and activities and as such, natural environments become the basis for this form of emerging tourism (Balmford *et al.,* 2009; Kontsiwe and Visser, 2019). It is furthermore argued that nature-based tourism was defined as the combination of tourism, education and oftentimes adventure (Valentine, 1992). While eco-tourism has been specifically defined as both the non-invasive enjoyment and the conservation of the natural environments, fauna and flora are the subjects of tourism practices (Valentine, 1992; Balmford *et al.,* 2009). Throughout the years, this form of tourism has become increasingly popular across the globe and as mentioned above, has grown to contribute significantly to the Southern African economy (Balmford *et al.,* 2009). Literature on phenology-based tourism is likewise steadily growing, albeit this subject is in its early emerging stage. These forms of tourism not only define the role nature and biodiversity plays in tourism (Buckley, 2012), but they furthermore speak to the relationship tourists have with nature (Balmford *et al.,* 2009).

Valentine (1992) uses three definitions of how people engage with nature through tourism. The first refers to tourism that is wholly dependent on natural environments and biodiversity. This is the case of phenology-based tourism. Phenology-based tourism refers to any tourism product or service that depends on the phenological phase of fauna or flora as the key tourism asset (Arneggar *et al.*, 2010; Mahlangu and Fitchett, 2019). Similarly, nature-based tourism uses the natural environment as a tourist asset, which can be directly or indirectly attributed to tourism activities, according to Valentine's (1992) second definition. These two forms of tourism rely on the stability and predictability of ecosystems and biodiversity as it contributes to the sustainability of the tourism business that depends on them (Sakurai *et al.,* 2011). Nature-based tourism has been extensively studied internationally and has throughout the years been connected to adventure tourism, coastal tourism, wildlife tourism and conservation tourism, which we the driving force behind the robust nature-based tourism rates in countries in Africa (and Southern Africa in particular), Asia and Central America (Balmford *et al.*, 2009; Arneggar *et al.*, 2010; Friedrich *et al*., 2020).

The third and final premise is when little to no direct contact is made with nature other than for its aesthetical properties (Valentine, 1992; Balmford *et al.,* 2009). This is the use of nature as a scenic backdrop for tourists when on holiday, often associated with resort holiday retreats (Seebaluk *et al.,* 2014, Kontsiwe and Visser, 2019). Tourists do not directly interact with nature or natural elements, however, prefer to be situated in visually appealing areas. In this instance, natural features, such as mountain ranges, the coast and other water features, forests or farms, create an atmosphere of them being in nature. This affirms their connection with nature, without directly engaging with the natural environment or plants or animals (Balmford *et al.,* 2009; Mahlangu, 2018). This can be the result of a variety of reasons.

Primary, it could be based on the personal preferences of tourists, who are not comfortable with interacting with plant and animal species when on holiday. This disconnect could likewise be attributed to the conservation measures implemented by a destination, which restricts interaction with the ecosystem in certain areas (Karanth and DeFries, 2011). Nonetheless, the act of being present in natural environments contributes to building a relationship between tourists and nature.

Due to urbanisation, sedentary and innovations in technology, there had been growing arguments that the relationship between people and nature is deteriorating as tourists are engaging less and less with natural environments. These authors argue that this disconnect will continue to grow and lead to a lack of understanding and concern for the deterioration of natural environments (Balmford *et al.,* 2009). Research over the past 20 years has shown that there has been an increase in nature-based and eco-tourism (Balmford *et al.,* 2009). However, this is occurring concurrently with the rate at which wilderness and biodiversity rates are decreasing at steadily rising rates (IUCN Red List, 2022). The protection and preservation of natural environments and biodiversity are imperative for the existence and sustainability of nature- and phenology-based tourism (Arneggar *et al.*, 2010; Buckley, 2012).

Tourist responsibility and the role tourists play in promoting the protection of the environment and the communities they visit are sparsely discussed in academia. However, in discussions on sustainable tourism and ecotourism, tourist responsibility has become a pillar in present-day discussion on nature-based tourism.

Lee and Jan (2015) mention that an integral part of nature-based tourism is the education of the natural environment tourism industries rely on. This includes education tourism operators

that used natural environments, fauna and flora as the premise of their tourism offerings and tourists who partake in nature- and phenology-based tourism (Arneggar *et al.*, 2010; Buckley, 2012; Tao *et al.,* 2015). Through education, authors believe that tourists can grow empathy and a level of concern about the conservation and sustainability of natural environments and their ecosystems (Balmford *et al.,* 2009; Lee and Jan, 2015; Mercadé Melé *et al*., 2020). Nature-based tourism allows tourists to engage with natural environments in a variety of different ways and at varying degrees, based on their level of comfort, which can give tourists the autonomy to gauge their relationship with nature at their own pace and limits. Education enables this process and likewise empowers tourists by providing them with the knowledge which has the power to re-shape their relationship with travel and the environment (Lee and Jan, 2015). Furthermore, growth in environmental awareness among tourists at a large scale translates into shifting customer needs and wants regarding tourism practices and the environment, which can lead to the want for more conservation to ensure the sustainability of the natural environments used for tourism purposes (Balmford *et al.,* 2009; Lee and Jan, 2015). Nonetheless, for this process to occur, there is a need for strong educational outlets, specifically about natural points of interest/destinations, their ecosystems and biodiversity. To ensure these sects of tourism continue to thrive in the interim, nature-based tourism industries need to understand the potential and current threats to their sustainability and examine their readiness to act on present challenges and their preparedness to mitigate the imminent effects (Balmford *et al.,* 2009; Lee and Jan, 2015; Mahlangu and Fitchett, 2019; Mercadé Melé *et al*., 2020).

This study aims to assess the importance of natural environments as an integral part of local tourism sectors and the events these industries are dependent on. Further examining the

potential and current threats to the natural environment, fauna and flora tourism industries rely on, it is important to examine the level of concern, if any, tourists and tourism operators hold regarding these potential effects on the future sustainability of small-town economies. It is only through probing these perceptions that will prompt the preparedness of the industry actors and consumers to address and mitigate these potential issues for the future.

2.4. The Shifting Relationship between Climate Change, Tourism and Phenology

Tourism is dependent on favourable climatic conditions for operation at various alternating stages and thus, climate change poses a critical threat to the sustainability of tourism sectors in both developed and developing countries (Halseth and Meiklejohn, 2009; Hoogendoorn and Fitchett, 2018; Friedrich *et al.*, 2020). Rising global temperatures, increasing environmental degradation and extreme weather events are among the more notable threats to the tourism sector, which can have direct and indirect impacts. Higher temperature variation levels, extreme temperature highs and lows and extreme weather events include some of the more immediate and direct impacts on the tourism sector because of their effect on tourist comfortability levels (Fitchett *et al*., 2016), while increasing global temperatures indirectly affect seasonality and thus, phenology (Mahlangu and Fitchett, 2019).

Climate change and rising global temperatures primarily cause unpredictability and this could result in a loss of financial revenue, the stability and reliability of tourism sectors (Dreyer *et al.*, 2005; Hoogendoorn and Fitchett, 2018; Catalano *et al.*, 2020; Dube and Nhamo, 2020). This is a concern for both tourists and tourism operators. Tourists rely on stable weather

conditions to determine their tourist activities and itineraries in advance and what they ought to pack for a trip (Fitchett *et al*., 2016; Hoogendoorn and Fitchett, 2018; Catalano *et al.*, 2020; Dube and Nhamo, 2020). Thus, higher temperature variations and the occurrence of extreme weather events could deter tourism visitation and decrease revisitation rates. Apart from unpredictability, good weather has been identified as a notable tourist attraction and large-scale climatic changes will have an impact on the favourability levels of 'good weather' destinations (Fitchett *et al*., 2016; Hoogendoorn and Fitchett, 2018; Friedrich *et al*., 2020). Tourism industries and businesses are no longer able to provide adequate expectations for their tourism products and services because they lose the ability to plan and market their products and services in advance (Mahlangu and Fitchett, 2019). This can result in the loss of revenue, customer satisfaction and reputability. Furthermore, the overall sustainability of these tourism industries is threatened, and this is most applicable for nature-based tourism and more specifically, phenology-based events tourism (Sakurai *et al.*, 2011; Mahlangu and Fitchett, 2019).

Climate change has largely been attributed to anthropogenic activities, which have altered the earth's natural characteristics and cycles, resulting in a variety of negative and irreparable effects (Parmesan, 2006). The exorbitant addition of greenhouse gases in the atmosphere through the burning of fossil fuels and increased rates of deforestation has contributed significantly to enhanced global warming over the past century (Cleland *et al.*, 2007). All these processes are attributed to global economic development that is dependent on the extraction and excessive use of non-renewable materials. The greenhouse effect is a natural process where the atmosphere retains reflected heat to maintain an atmospheric temperature suitable for life on earth. However, the introduction of greenhouse gases released from

anthropogenic processes has exasperated this process resulting in increasing global temperatures. The effects of this level of air pollution are projected to raise global temperatures in the near to extended future, which will continue to cause dire environmental changes, including effects on ecosystem services, biodiversity loss and irreversible degradation of natural environments (Dreyer *et al.*, 2005; Cleland *et al.*, 2007).

Over the past few years, various academics have reviewed climatic data in different capacities to illustrate the rate at which global temperatures have risen over the past century. Root (2003) recorded that global temperatures had increased by 0.6°C throughout the twentieth century. Ogawa-Onishi and Berry (2013) recorded that global temperatures had increased by 0.74°C from 1906 to 2005, or at a rate of 0.18°C per century. Hensen (2006, in Cleland *et al.,* 2006) recorded a 0.85°C increase in global temperatures between the years 1880 to 2012 or a rate of 0.2°C per decade. Hulme *et al.* (2010, in Steyn and Spencer, 2012) and Midgley (2010, in Steyn and Spencer, 2012) predicted that January temperatures in South Africa will increase by 0.5 to 1.0°C along the coasts and 2.5 to 4.5°C in the interior by 2050 and 4°C by 2100 (Hoogendoorn and Fitchett, 2018; Rosselló *et al.,* 2020).

Shifting phenology has been identified as one of the most sensitive responses to climate change and this has been a widely held position within academia over the past decade (Parmesan and Yohe, 2003; Dreyer *et al.*, 2005; Cleland *et al.*, 2007; Donnelly and Yu, 2017). Donnelly and Yu (2017) mention that the link between rising global temperatures and shifting phenology has only recently been discussed in recent years and increasingly more over the past ~10 years. Phenology has been reportedly advancing at a continuous rate of 0.2°C per decade over the last 30 years as recorded by Hensen (2006, in Cleland *et al.,* 2007). Over the 20th and early 21st Centuries, studies have been conducted to observe and formulate century-

long records on the phenological patterns and the phenophases of species across the world (Donnelly and Yu, 2017). Results show that there is evidence of season encroaching and a forward shift in phenological patterns of a species at varying rates (Cleland *et al.*, 2007; Grab and Craparo, 2011; Fitchett and Fani, 2018).

Phenology is "the timing of annually recurrent reproductive biological events" (Fitchett *et al.,* 2015, 460), and the phenological phases of animals and plants are heavily dependent on seasonality, and climate, through precipitation and temperature (Cleland *et al.,* 2007; Grab and Craparo, 2011; Chambers *et al.,* 2013; Inouye, 2022). Any changes that occur in natural environments and the climate over time will impact the phenological timing of different plant and animal species, as the ecosystem will adapt to the impacts and inadvertently change the phenological cycles of plant and animal taxa (Parmesan, 2006; Cleland *et al.,* 2007; Grab and Craparo, 2011; Chambers *et al.,* 2013; Yun *et al.,* 2017; Craig and Feng, 2018; Inouye, 2022). Changes in phenology are prominently place- and species-specific (Fitchett *et al.,* 2015).

With South African temperatures projected to rise steadily in the near future, higher temperatures, increased temperature variation and extreme weather events are likely to cause tourist discomfort and over time, deter tourists from certain destinations (Hoogendoorn and Fitchett, 2018; Rosselló *et al.,* 2020). This could change the landscape and timing of tourism across the world, particularly in tourism-led towns with undiversified industries (Fitchett *et al*., 2016). Events- and phenology-based tourism requires a certain level of predictability regarding weather conditions and the phenological patterns of plant and animal species to operate effectively (Sakurai *et al.*, 2011; Mahlangu and Fitchett, 2019). Being able to predict the dates of fauna and flora phenophases will allow businesses to accurately prepare for the future and, thus, nature-based tourism businesses need to be able

to predict specific dates and periods to organise their events and tourism products accurately (Sakurai *et al.,* 2011).

Hoogendoorn and Fitchett (2018) highlight the lack of research conducted on the current and potential impacts of climate change on tourism in Africa, considering that climate change is projected to affect the African continent more severely than any other part of the world. Dube and Nhamo (2020) similarly stress that this is the critical 'first step' that is imperative to move toward researching adaption and mitigation strategies. This study hopes to contribute to this research gap. Climate change and shifting phenology will have impacts on the consistency and sustainability of events- and phenology-based tourism (at large and particularly in rural areas), predictable climatic conditions and nature-based tourist attractions necessary for the economic development of tourism industries worldwide (Fitchett *et al*., 2016).

Lee and Jan (2015) argue that nature-based tourism could be educational for tourists and contribute to a growth of environmental responsibility in tourists' behaviours and particularly, tourists who exhibit a positive relationship with natural environments. These experiences could enhance the social value of the biosphere, which can translate into the widespread call for the conservation of natural environments and their ecosystems (Lee and Jan, 2015). The global tourism industry produces an estimated 8% of carbon emissions, and the increasing rate of consumption and waste production cause substantial issues for tourist destinations globally (Unger *et al*., 2016; Ștefănică, 2017) As the global tourism industry is one of the largest contributors of climate change, this can be a potential solution to changing global tourism and travel practices that contribute to the growing rates of atmospheric pollution and environmental degradation. It is imperative for key stakeholders in the tourism industry, on both sides of the spectrum, to acknowledge their impact on the environment and

conversely, the responsibility to address the growing issues caused by climate and environmental change, including all future challenges predicted to affect the global tourism sector. This awareness has the potential to not only hold institutions and governments accountable for their carbon emissions and climate action but to encourage tourists to engage in sustainable practices while travelling (Mercadé Melé *et al*., 2020).

It is of great importance to consider the potential effects on nature- and phenology-based tourism, through activities, amenities, and events, specifically in rural areas which are sensitive to internal and external factors. The forms of tourism, such as in the case of Chrissiesmeer, play a large role in the growth and sustainability of the local economy (Sakurai *et al.,* 2011). Furthermore, because the ecosystem stands at risk of climate and environmental change, the potential impact needs to be assessed in an attempt to potentially combat the effects of these climate and environmental threats (Steyn and Spencer, 2012; Craig and Feng, 2018; Dogru *et al.*, 2019). Catalano *et al*. (2020) state that gradual long-term fiscal planning on the part of governments and institutions could contribute to higher and more sustainable economic growth when faced with the threat of climate change. The collaboration of each of the aforementioned forces could lead to the development of adequate policies and strategies to combat the impacts of climate change, despite the rarity of such policy in current tourism structures across the globe and Southern Africa (Fitchett *et al.,* 2016; Dube and Nhamo, 2020).

2.5. Conclusion

This literature review is based on niche forms of tourism in literature which included event-based tourism, small-town tourism, and wedding tourism, and how each of these intersects

and contributes to the success of tourism sectors. Furthermore, the relationship between society and nature was explored by examining nature-based tourism, and phenology-based tourism. This section discussed how a relationship is formed through how tourists, directly and indirectly, interact with the natural environment, plant and animal species, and how these forms of tourism have the potential to increase environmental awareness need through a blend of education and recreation. Lastly, literature on climate change, rising global temperatures and shifting phenology was reviewed to gauge the potential impact these events could pose on the tourism industry at large and in small-town South Africa. Thus, small towns need to invest in predictive tools that enhance their adaptive capacity to the potential effects of climate change these areas will face.

3. Study Site

3.1. Introduction

This study seeks to examine small-town, nature-based and wedding tourism in one small town. As such, Chrissiesmeer was chosen as a suitable study site as this region practices each of the aforementioned tourism activities. Chrissiesmeer, a small town located in the east of the Mpumalanga province, is surrounded by 270 lakes and pans and thus, this region is known as the Lake District of South Africa (Spratt, 2019). Due to its diverse tourism sector, Chrissiesmeer will provide an understanding of how each of these tourism sectors intersects and operates at the local scale and how tourism has or potentially could be impacted by the threat of climate change. This chapter will work to describe the location of Chrissiesmeer, including its climatic characteristics, which contribute to the life and sustainability of the fauna and flora present in this region. Furthermore, this chapter will look at the cultural and historical significance of Chrissiesmeer, how this history has shaped the natural landscape of the regions and how it contributes to cultural tourism practices. Each of the tourist activities offered in Chrissiesmeer will be discussed to provide an overview of the tourism structure of this town's economy and to categorise where each category falls under small-town, nature-based and wedding tourism alike.

3.2. Location Description

Chrissiesmeer (26°16'52''S, 30°12'38" E) is a small-town located in Mpumalanga province (Figure 1), at an elevation of 1673 metres above sea level. The town covers a surface area of

3.25km^2 (Chrissiesmeer, 2015) and is located north of Lake Chrissie. It is 175km southwest of Mbombela and 35km to the east of Ermelo. It is connected to Ermelo through the N17, which runs through Chrissiesmeer's town centre. It is a part of the Gert Sibande District, under the Local Municipality of Msukaligwa. It is also known as *Matotoland*; *matoto* is a Swati word that means 'frog' (Mpumalanga, 2019). In 2011, the town had a population of 4012 residents as recorded by the national censors (Censors, 2011).

3.2.1. Biome and Climate

The Mpumalanga landscape is predominately a grassland area (Figure 2), and Chrissiesmeer is particularly a part of the Mesic Highveld Grassland (Matsika, 2007; Carbutt and Martinbale, 2014; National Biodiversity Assessment, 2018). The highland region has a temperate temperature variation throughout the year, with summer temperatures reaching a T_{max} of 26°C and a T_{min} of 17°C, with a winter temperature range from a T_{min} of 8°C to a T_{max} of 20°C (Mpumalanga, 2019). The winter seasons can reach sub-zero temperatures and lead to the formation of snow. The rainfall season is during the summer months of October through to April, while the drier winter months are from May through to July. This area receives a mean annual rainfall that ranges from a minimum of 400mm to a maximum of 1200mm per year (Matsika, 2007).

Chrissiesmeer is a protected grassland and wetland area and was declared as such on 22 January 2014 (Figure 3). This made the Chrissiesmeer area one of the largest protected grassland regions (60 230 hectares) in South Africa, under the National Environmental Management Protected Areas Act (57 of 2003) (International Crane Foundation, 2014). As a signatory of the Hohhot (June 2008) and Bariloche (February 2010) Temperate Grasslands

Declarations, including the Convention on Biological Diversity, South Africa was set in place to conserve its indigenous grasslands (Carbutt and Martinbale, 2014). The primary goal of these efforts was to protect and conserve the "world's remaining large contiguous and intact tracts of grassland that support landscape-scale processes" (Carbutt and Martinbale, 2014, 106). Thus, this area is protected against any form of unsustainable development, to the benefit of developing tourism, livestock farming, water security, conservation of biodiversity and improving the state of the grassland region (Cadman *et al.,* 2013; International Crane Foundation, 2014). Carbutt and Martinbale (2014) record that approximately 3.4 to 5.5% of the world's grassland regions were protected at this time, while the International Union for Conservation of Nature (IUCN) states that the number of protected grassland regions stands at 4.5% globally (IUCN, 2022).

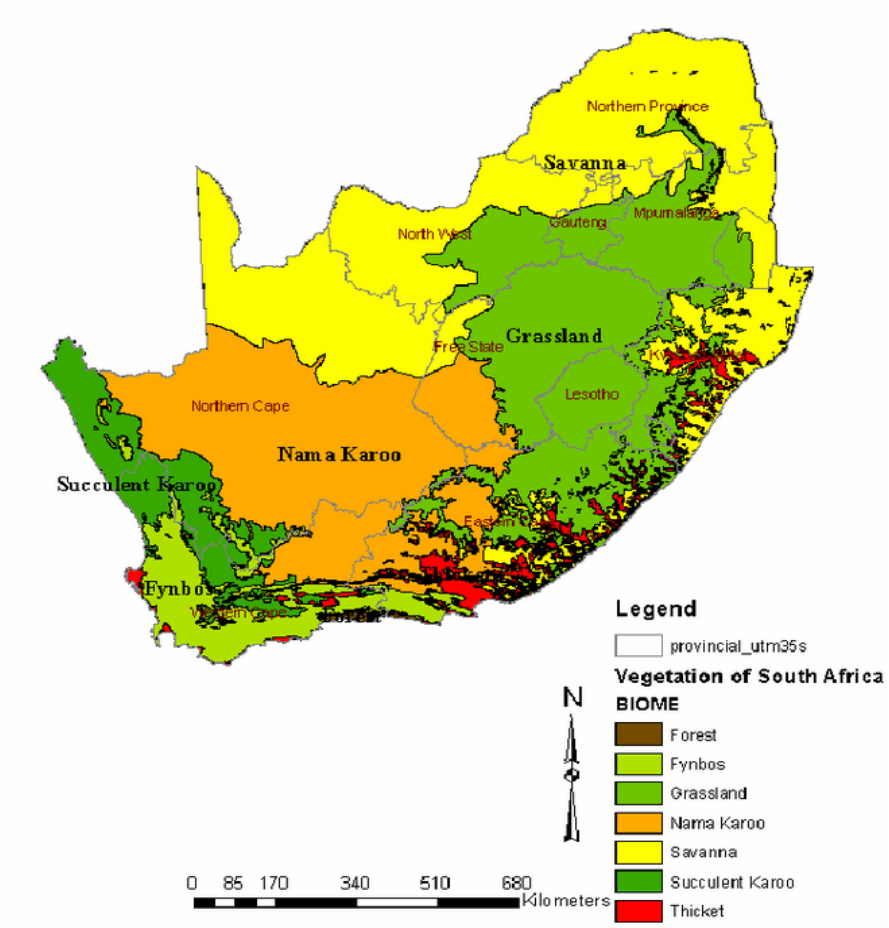


Figure 2 The biomes of South Africa against the country's provincial borders (After Matsika, 2007).

3.2.2. Lake District

Chrissiesmeer is located on the northern banks of Lake Chrissie, in an area surrounded by 270 lakes and pans, in the Highveld region. These 270 lakes and pans are the primary reason this area is known as the Lake District of South Africa. At between 1600m and 1800m above sea level, Chrissiesmeer is located in an area of the highest plateaux of the Highveld and thus, Chrissiesmeer is a watershed region where four major river systems begin (Mpumalanga, 2019). These rivers include: the Vaal, Komati, Mpuluzi, Olifants and Usutu rivers

(Chrissiesmeer, 2015). The name of Chrissiesmeer's local municipality, *Msukaligwa*, translates to "Source of the River" (Sanders, 2016). Additionally, Chrissiesmeer is one of the world's few dually protected wetlands and grasslands areas.

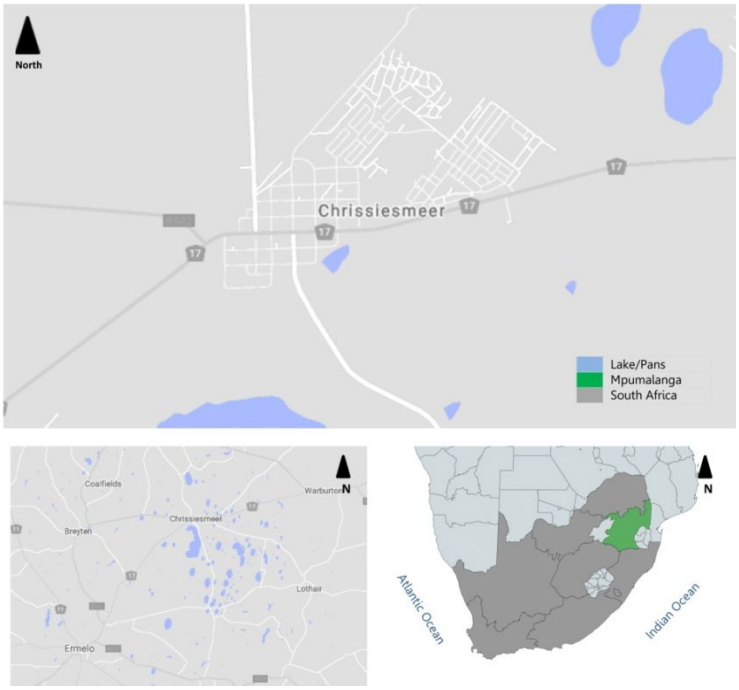


Figure 3 Study site map of the Chrissiesmeer area.

3.2.3. Biodiversity

3.2.3.1. Flora

Nature plays a huge role in the tourism sector at Chrissiesmeer. Apart from the area being particularly known for its lakes and pans, the climate and proximity of Chrissiesmeer are particularly attractive for tourists in major surrounding cities, which is further accomplished by the area's diverse fauna and flora. Cadman *et al.* (2013) reported that there were 72 nationally recognised grassland vegetation species identified in the South African Grassland

Biome. This area has an abundance of grass species, to the point where everyone in every six species is grass (Cadman *et al.,* 2013). The most populous plant species in the Highveld area are soft-leaved herbaceous plants, referred to as forbs and bulbs. Throughout the area's colonial history, interregional migration and a continued lack of grassland management, there were introductions and infestations of alien tree and shrub species in the area. These species include brushwood, bramble and thicket (Cadman *et al*., 2013; Sanders, 2016). Chrissiesmeer, in particular, is known for its various wildflower species, which inspires the Wildflower season and festivals held in the area during January (Chrissiesmeer, 2015).

3.2.3.2. Fauna

Chrissiesmeer is a protected grassland and wetland area, with a large array of species that are supported by the environment. Historically, Chrissiesmeer was populated with wildlife and game before the extinction of the hippopotamus species in 1887 (Sanders, 2016). Today, Lake Chrissie and the surrounding lakes and pans promote a large birding and frog species in the area (Mpumalanga, 2019; South African Tourism, 2022). During the well-known birding season (September to March), the town provides bird watching activities and conducts annual crane counts to track the various crane species in the area. Apart from these activities, the town hosts two annual birding festivals, namely the Flamingo and the Crane Festival (Chrissiesmeer, 2015; Mpumalanga, 2019). Some of the more notable bird species include the South African national bird (the Blue Crane), Grey-Crowned Crane and the Wattled Crane. Each of these species has been placed on the IUCN's endangered red list, and the population size of each of these species has been recorded as decreasing in population size annually (IUCN Red List, 2022). The Lesser and Greater flamingo species are likewise inhabitants of the

area and can be spotted particularly between September and October (South African Tourism, 2022).

Chrissiesmeer has hosted an annual 'Frog-Night' (*Padnag*) festival, which is a weekend-long event held in early December (Chrissiesmeer 2015). At these events, tourists can engage in various frog-related activities, both fit for adults and children. Chrissiesmeer prides itself in boosting the variety of frog species present in the area. Some of these species include but are not limited to, Striped and Common Stream frogs and Grass frogs, including Cape and Common River frogs (Chrissiesmeer 2015).

Other forms of nature-based economic activities that Chrissiesmeer participate in include agriculture (large farming community), fishing, and wildlife hunting. Fishing and camping establishments, such as Teen Die Meer and the NGK's Gennesaret, are well known in the area for their camping and fishing expertise and activities. Hunting is an activity in the area that appears to be the private preference of a niche group of tourists in the area. The *Matotoland* EcoTourism Association (Chrissiesmeer's tourism website) cited Holnek Game and Nature Reserve as the only establishment under a tab labelled "Hunting" on their website (Chrissiesmeer, 2015).

3.2.4. Culture and History of Chrissiesmeer

Chrissiesmeer has a diverse cultural history, which outlines the tourism sector of today. The San people, also known as Bushmen, were nomadic hunter-gatherers that migrated according to the migration patterns of the game in the region for millennia in the Highveld area (Sanders, 2016). From the 16th century onwards, the bushman population hit its peak which would vary with the war-ridden history of the area. By the 1960s, the last bushman was

witnessed. The San Bushmen left behind rock-art paintings at La Rochelle Cave (Figure 4). This area is likewise connected to the *Bokoni* civilisation. This indigenous group is best known for innovative agricultural techniques and wall structure architecture atop hilly landscapes, which was previously attributed to European settlements throughout history (Sanders, 2016). Remnants of the *Bokoni* people are still present today, on the Bothwell Farms (Figure 4). The *Bokoni* population migrated following the establishment and expansion of the Kingdom of *Swazi* into the present-day Highveld area in the 18th century.



Figure 4 Bushman rock art at La Rochelle and The Bokoni civilisation remnants on Bothwell Farm (Adapted after Sanders, 2016)

Towards the 19th century, the Zulu Kingdom began to expand northward from Kwa-Zulu Natal, encroaching on the territory of the Kingdom of Swazi at the time. This was the beginning of a period of conflict between the Swazi and the Zulu nation, so brutal it is often referred to as *Mfecane* (the crashing) in Nguni and *Dfaqane* (the hammering) in Sotho. During King Mswati II's hostile expansion, the Kingdom's invasions were said to execute violent raids of Bushman settlements, with one such raid resulting in a massacre at Murder Rock. A site named after the bloodshed and made popular due to the landscape's unique 'mushroom-like' geological shape (Chrissiesmeer, 2015). The Bushman communities that lived near reed pans would float their settlements to the centre of the pans to avoid conflicts with the Swazi armies. In 1895, King Mswati II surrendered the Highveld land to the Voortrekker Boers, setting the present-day Mpumalanga area under the Boers administration. This area of land would soon be incorporated into the recently established *Zuid Afrikaansche Republiek* (ZAR) of 1857.

In 1864, due to tremendous financial stress, the ZAR government accepted the assistance of Scottish businessmen, Alexander McCorkindale and David Forbes, to contribute to the development of the acquired land. This area, which encompassed Chrissiesmeer, Lothair, Warburton, Lochiel, The Brook and Jessievale, was deemed New Scotland which was made up of 200 farms McCorkindale bought from the ZAR (Sander, 2016; Florence Guest Farm, 2019). One of those farms would make up the present-day Florence Guest Farm. This area was broken up into three segments of land. The northern part was referred to as Zeekoeipan, which was later named after President (of the ZAR) M.W. Pretorius's daughter Christina, who was known as Chrissie. The area would be referred to as Lake Chrissie, and later, Chrissiesmeer (Sander, 2016).

The discovery of alluvial gold in the Sabie Pilgrim's Rest area in 1873 was a catalyst for settlement development in New Scotland and the overall Industria region. This 'gold-rush' led to the development of Chrissiesmeer, through growing commerce, the establishment of "stores, a post office, a bank, a mail office, a hotel, a gin port, and a small jail... at the centre of business on the eastern highland" (Sanders, 2016, 33). During this period, John Jack, a merchant and businessman from Durban, moved to Chrissiesmeer for commerce and began to renovate former structures by building sandstone structures which included a hotel, stables and a gin depot. These same structures were recently renovated (2011) and converted into the present-day Billiard Room, John Jack Inn and The Gin Shop (Figures 5 and 6).

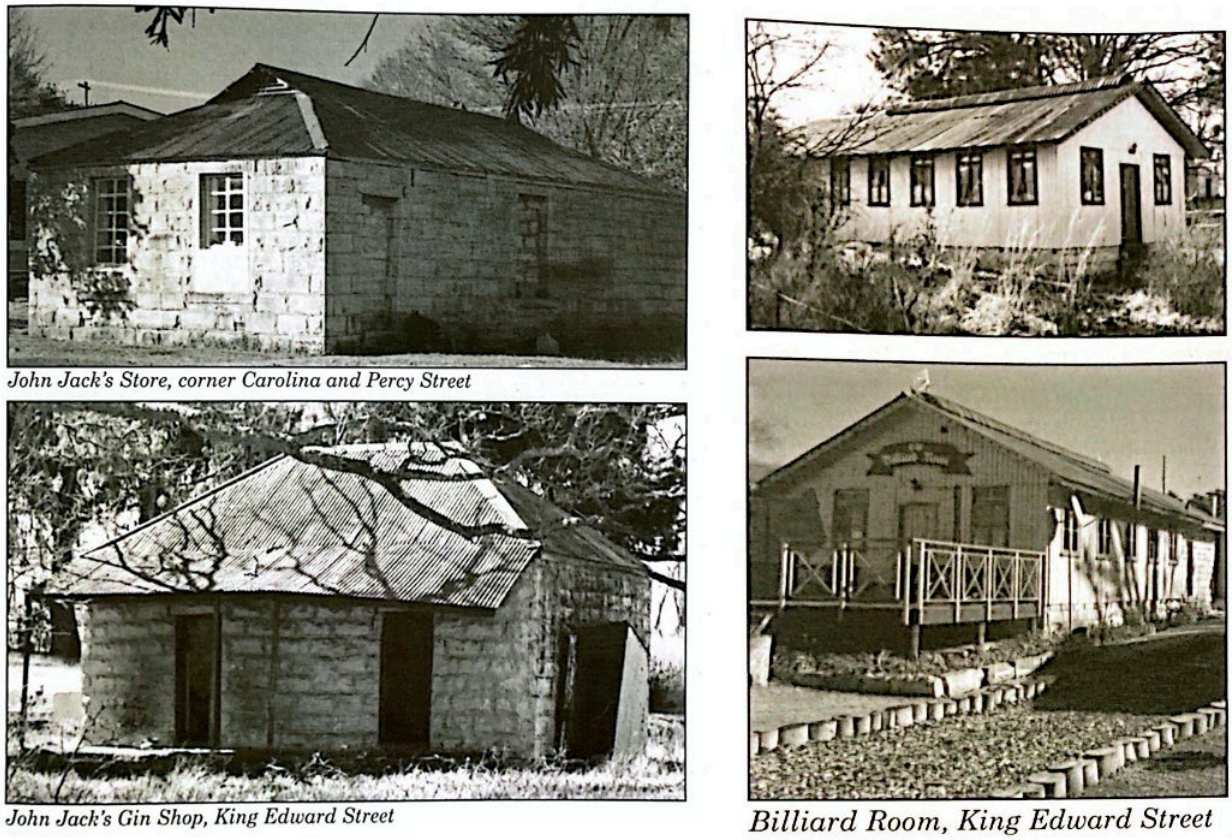


Figure 5 John Jack Store, Gin Shop and The Billiard Room on King Edward Street (Adapted after Sanders, 2016).

The ZAR's official church, the *Nederduitsch Hermormde Kerk* (NHK), unified with the *Negeduitsch Gereformeerde Kerk* (NGK) in 1885. On 20 April 1892, the first NHK church was established in Chrissiesmeer on a farm donated by Parker Wood, surrounding Lake Chrissie. The *Hermormde* Church still stands today in the city centre of Chrissiesmeer (Figure 7).





Figure 6 Present-day Gin Shop and John Jack Inn (Images taken by Louise Pavin).



Figure 7 The Chrissiesmeer NGK church, formerly the original Ermelo NHK (Images taken by Louise Pavin).

On 12 April 1877, the First War of Independence began shortly after the discovery of gold in the Witwatersrand area, the British seized Pretoria and later the Transvaal, under the order to resolve the ZAR's governmental debt and reclaim political instability (Sanders, 2016). This war spanned from 1880 to 1881 with a British defeat by their Boer counterparts. The Second World of Independence (the Anglo-Boer War) started on 11 October 1899 following the increasing expansion of the British Empire in ZAR and when British forces requested full voting rights as citizens of the ZAR, and the Republiek government denied their request (Sanders, 2016). During the war, British troops would travel through Chrissiesmeer, and settle at Bothwell Camp in Chrissiesmeer as a basecamp. With the Boer forces losing momentum toward the end of the war, they adopted guerilla warfare tactics, which would lead to the ambush operation of the Battle of Chrissiesmeer, where 2500 Boer troops attacked the British camp at Bothwell camp on the evening of 6 February 1901 (Sanders, 2016). Remnants of the war remain in the small town, which included a war cemetery and the Bothwell battle sight. The war ended when the Boers accepted their defeat and surrendered their independence with the Peace of Vereeniging of May 1902 (Sanders, 2016).

3.3. Conclusion

The tourism sector in Chrissiesmeer is incredibly diverse filled with a large variety of nature-based and event-based tourism, possessing cultural and historical significance. This area is likewise unique as it is one of the few dually protected wetland and grassland areas in the world, protected under the National Environmental Management Protected Areas Act (57 of 2003; International Crane Foundation, 2014). It is a large watershed area that marks the

beginning of four major river systems in South Africa, namely the Vaal, Komati, Mpuluzi, Olifants and Usutu rivers. With 270 lakes and pans in the region, the Chrissiesmeer area is known as the Lake District of South Africa, which likewise serves as a key ecosystem due to the diverse fauna and flora. Each of these aspects when combined with the rich multi-cultural and historical background of the Chrissiesmeer area contributes significantly to the diverse tourism sector of this small town.

4. Methodology

4.1. Introduction

This study will use a variety of primary and secondary data, through a qualitative and quantitative mixed methods approach (Kontsiwe and Visser, 2019). This study aims to examine and understand the tourism sector in Chrissiesmeer, the perceptions of tourism operators and tourists on climate-related threats, the potential effects of climate change on tourism in Chrissiesmeer, and lastly the predictability and the sustainability of the tourism sector in the face of climatic threats. Thus, this study has opted to take the triangulation of results approach (Flick, 2004). This approach ensures that each element is examined from various alternating perspectives to achieve a holistic understanding of the core of a study, and as such, seeks to benefit from the collaborative efforts use of qualitative and quantitative methods in a research study (Flick, 2004).

As a means of achieving the aims and objective of this study key-informant semi-structured interviews were conducted with tourism operators to gauge their experiences and perceptions of tourism, including the environmental and climatic changes the respondents have experienced in Chrissiesmeer (Fitchett *et al.*, 2016; Mahlangu and Fitchett, 2019). Comprehensive tourist questionnaires were designed to gauge the experiences of former tourists, their practices, and engagements with Chrissiesmeer, including tourist perceptions of the potential effects of climate change on the tourism sector (Fitchett *et al.*, 2016; Kontsiwe and Visser, 2019). Similarly, online reviews written about any of the Chrissiesmeer tourism establishments that have profiles on TripAdvisor, Booking.com and SafariNow were collected and analysed (O'Connor, 2010). Lastly, a contemporary phenological database was created

using Instagram posts which included the location tags of Chrissiesmeer and the town's tourism establishments (Fitchett and Fani, 2018). The interviews were transcribed, and the questionnaires, online reviews and Instagram posts were all reviewed and thematically categorised, according to mentions of events, festivals, weddings, and nature-based tourism. Also included are any mentions of the natural environment, weather, and climate change. Finally, ethical considerations and the identified limitations of this study methodology were discussed.

4.2. Data Collection

Due to the outbreak of COVID-19, this study was initially a desktop online study. However, due to the increasing lack of response from study participants, this methodology branched into a mixed desktop online and in-the-field study. Two fieldwork trips were conducted to engage with tourism operators and tourists in the area. The primary fieldwork trip was from the 28th to the 30th of March 2021 and was followed by a secondary trip from the 22nd to the 24th of September 2021. These fieldwork trips were taken roughly six months apart, with the purpose of data collection through conducting stakeholder semi-structured interviews and hand-out questionnaires to tourists in the town during the different seasons of the year.

4.2.1. Stakeholder Semi-Structured Interviews: Tourist Operators

The key informant semi-structured interviews were conducted with local key stakeholders in Chrissiesmeer to examine their first-hand experiences of tourism in the town and to gather a record of Chrissiesmeer's events. These interviews included questions on festivals, event-

based tourism, wedding tourism and nature-based tourism in Chrissiesmeer, including the effect that small-town tourism has on the success of local businesses (Kontsiwe and Visser, 2019). Lastly, the tourism operators were asked to share their perceptions of climate and environmental change, and the potential threats to the tourism sector in Chrissiesmeer (Sakurai *et al.*, 2011; Fitchett *et al*., 2016).

These interviews were conducted with 11 tourism operators who either owned or managed an establishment related to the tourism sector, such as accommodation, food and drink services, convenience and souvenir goods and any establishments that provide tourist activities. This included all wedding venues, nature-based tourism as well as cultural and historical tour operations in Chrissiesmeer, Mpumalanga. The participants of this study, identified through convenience sampling, will be members of the community, tourists and tourism operators (Lee and Jan, 2015; Dube and Nhamo, 2020). This is based on approaching the representatives of small businesses in the area that were most accessible, according to their location in Chrissiesmeer and the services or goods they provided.

These interviews were conducted in person in Chrissiesmeer (10) and telephonically (1), under the COVID-19 social distancing protocol. All fieldwork was conducted during National Level 1 Lockdown periods. These interviews were subject to the international health guidelines of social distancing, where all wore a mask and maintained a distance of at least one to two metres between each other (World Health Organisation, 2020). Hand sanitiser was provided and used on any shared equipment. Where applicable, washing hands and COVID screening (in the form of a temperature check, and symptom checks) were encouraged and practised (World Health Organisation, 2020). Each small business was emailed before the interview to inform them of the purpose of the study and to arrange a time for each interview.

As email and telephonic responses were scarce, each representative was informed about the purpose of the study, the implications of their participation and of how the data would be presented at the time of the interview (Annexure B). Each interview ranged from 45 to 90 minutes and all were solely conducted in English. All interviews were audio-recorded with permission from each respondent (Annexure C) and were all transcribed for analysis.

The interview was semi-structured to allow flexibility in the delivery and phrasing of questions depending on the conversations and to promote an uninterrupted flow of dialogue between the researcher and respondent, so respondents would freely share their experiences (Corbetta, 2003). This method of conducting interviews is most beneficial when a rapport is built when a researcher and a respondent can connect through a shared understanding (Corbetta, 2003). This process was supported by pre-determined questions that were used to assist frame the conversation around the context of the study (Annexure D). The interview schedule included 54 questions on their experiences as small-town businesses and how events-based, wedding, and nature-based tourism affect businesses in Chrissiesmeer. Some questions were designed to probe the respondent's perceptions of climate and environmental change and whether they believe that these effects will impact tourism in Chrissiesmeer and their business. Furthermore, each tourism operator was asked to comment on their business experience during the various National Lockdowns, due to the global COVID-19 pandemic and the effects the pandemic has had on their businesses.

4.2.2. Questionnaire: Tourist Experiences and Perceptions

The comprehensive tourist questionnaires aimed to gauge the tourists' perceptions and attitudes towards small-town tourism, the environment and the potential threat of climate

change on tourism at Chrissiesmeer (Lee and Jan, 2015; Fitchett *et al.*, 2016). The questionnaire was designed to gauge the travel practices and patterns of former Chrissiesmeer tourists, including what motivated them to visit the area, their potential experiences of nature-based and events-based tourism and the natural environment at large. These participants were asked to comment on their climatic and environmental experiences during their trip and their perceptions of climate and environmental change, and the potential effects of these threats on the Chrissiesmeer tourism sector. As a part of this, participants were asked to comment on their level of environmentally responsible behaviour and the importance of environmental preservation practices as tourists (Lee and Jan, 2015; Figure 8). Lastly, the participants were asked to comment on whom they believed ought to spearhead the efforts to mitigate and address climate and environmental change.

The questionnaires were self-administrated and answered by 12 former tourists electronically, through an open-access online survey platform. Participation was voluntary for any former tourists of Chrissiesmeer. The questionnaire was distributed through social media platforms through Facebook and LinkedIn posts, in tourism-related groups and Chrissiesmeer community groups. The questionnaire was made up of 46 structured questions (Annexure E), all of which were multiple choice, based on specific choices regarding details of their trip or a five-point Likert scale that would allow participants to gauge the degree to which they related to a particular statement or question (Lee and Jan, 2015). Due to initial concerns with the small-town sample space, it was expected that there would not be a large response of tourists for rural areas, as there would with mass tourism destinations. Thus, the tourist questionnaires were designed to be as detailed as possible, to receive a holistic understanding of former tourist experiences in Chrissiesmeer. Closed-ended questions were specifically

chosen, as studies conducted on online-based questionnaires show decreased levels of participation in questions designed with open-ended questions that those with closed-ended questions (Reja *et al*., 2003).

4.2.3. Online reviews: TripAdvisor, Booking.com and SafariNow

Due to the minimal number of TripAdvisor reviews posted on the profiles of Chrissiesmeer establishments, the reviews posted on Booking.com and SafariNow were added to the dataset. TripAdvisor was the primary source of online reviews as this method has been used as a useful methodological tool in studies published across various disciplines (O'Connor, 2010). Booking.com was used for similar reasons. It is one of the more notable online accommodation sites globally and thus, this platform would be accessible to a global audience, much like TripAdvisor (O'Connor, 2010). TripAdvisor reportedly attracts slightly under 30 million web visitors monthly and Booking.com parallels TripAdvisor in terms of global popularity. For the inclusion of South African tourists, SafariNow was selected to contribute to the sample. SafariNow is one of the most frequented online review platforms in South Africa and was specifically chosen for its proximity to nature-based tourism in the area, as competing sites were predominantly based on accommodation-based establishments rather than the inclusion of establishments that provided alternative services and tourist activities.

Online reviews were collected throughout this study and concluded on 1 April 2021. Firstly, all reviews that were posted dating back to 2011 were recorded and coded accordingly. There was no need to restrict the sample space to a particular time frame, hoping to contribute to

a historical track of tourism in Chrissiesmeer. Secondly, the sheer number of reviews posted on establishments in Chrissiesmeer would not adequately provide a varied understanding of the experiences and attitudes of former tourists regarding tourism in Chrissiesmeer had the sample space been restricted.

All reviews that were posted in English were recorded and later coded according to mentions of events/festivals, weddings, nature, plant or animal species, weather or climate. TripAdvisor and Booking.com both possess an internal translation feature, which enabled the translation of reviews written in an alternative language. All reviews posted using a foreign language were translated, recorded and coded using the translated version of the review. Close attention was paid to incoherent sentence structure and words rejected by the translation tool. Any statements which were not completely clear were not coded to avoid misinterpretation. SafariNow did not have a translation tool and all reviews that were not written in English were not coded, apart from imagery.

All reviews that were accompanied by images including any outdoor areas, natural environments, plants or animal species, were coded. These pictures were added to the mentions of nature, plant and animal species section. All written mentions were analysed categorically through the particular terms used. However, the images were simply logged as a mention of natural environments and no further analysis was conducted to avoid misinterpretation.

Each of the online reviews was coded with the following information recorded:

- Name of the establishment
- Date the review was posted

- Date/Month of trip
- Number of reviews/contributions each reviewer had posted
- Full text of the review
- Any mentions of festivals
- Any mentions of nature, natural environments, and nature-based activities
- Any mentions of weddings, and
- Any mentions of weather and seasonality

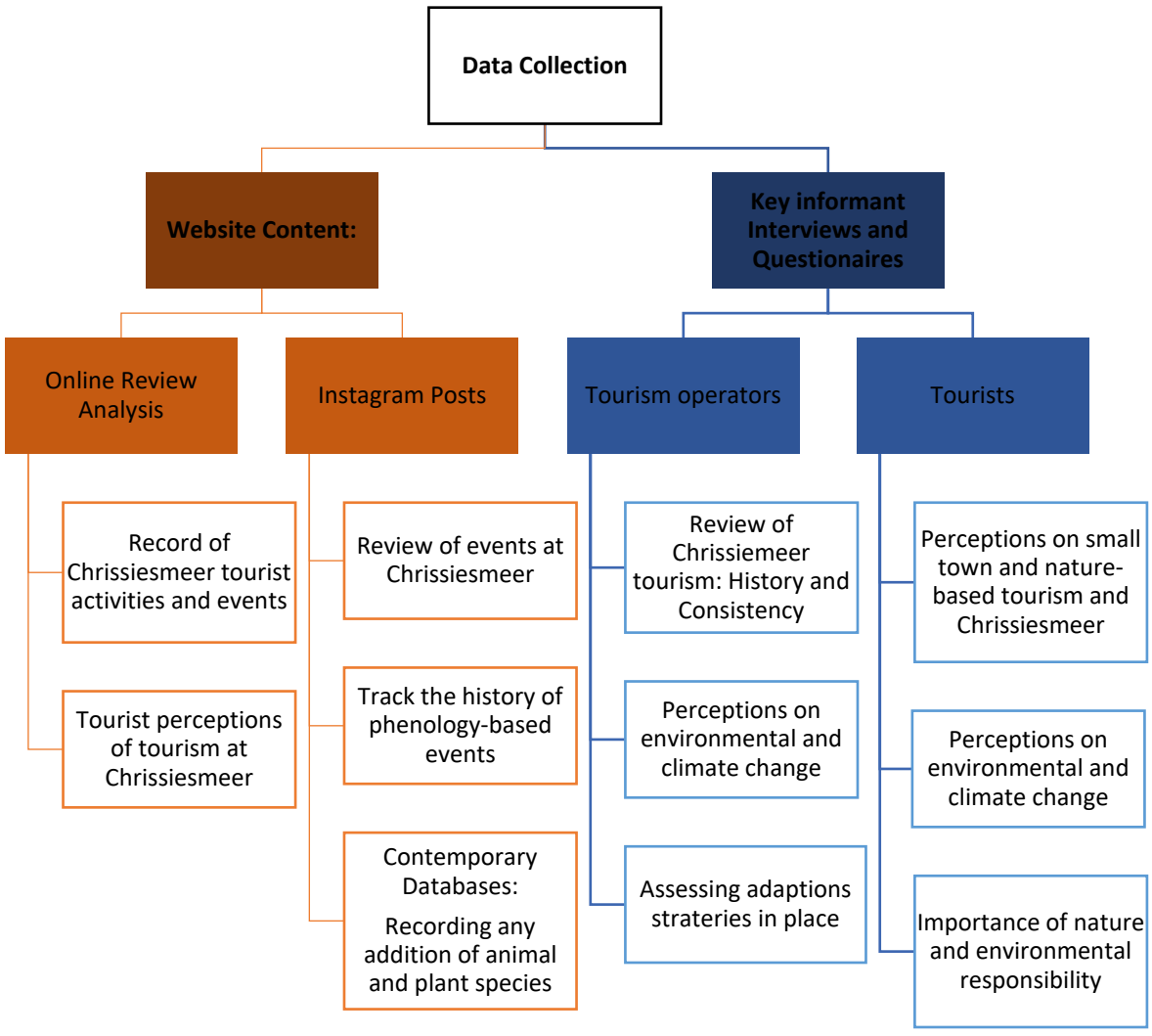


Figure 8 Methodological approaches to the aims and objectives of this study.

4.2.4. Contemporary Phenological Database: Instagram Posts

Due to the extent of the phenology-based tourist activity, it is important to consider the potential effects of phenological shift, as it has been identified as one of the earliest and most sensitive responses to climate change (Bertin, 2008). This quantitative method aims to use Instagram posts that included the location tags of Chrissiesmeer and the town's tourism establishments to create a "comparative contemporary dataset" (Fitchett and Fani, 2018, 473). This used imagery as a means of tracking and recording the phenological phases of the plant and animal species clusters identified in this study. The location tags that were tracked include:

- Chrissiesmeer (Town location)
- Lake Chrissie (Lake location)
- Chrissiesmeer Tourism + Booking (Town/administrative location)
- The Billiard Room (Establishment: Restaurant)
- The Gin Shop (Establishment: Brewery and Store)
- John Jack Inn (Establishment: Accommodation)
- Lake Chrissie Lodge (Establishment: Accommodation)
- Miss Chrissie Country House (Establishment: Accommodation)
- Florence Guest Farm (Establishment: Wedding venue)
- Teen Die Meer (Establishment: Fishing and camping site)
- Springgrove Estate (Establishment: Wedding venue)

All establishments identified in Chrissiesmeer were included in the Instagram search. All posts attached to the location tags of all available Chrissiesmeer establishments were recorded.

These establishments include but are not limited to, The Frog Shop, Mamma Mia Bakery, The Pink Flamingo Café and Smitfield. The remaining establishments were small farms that served as small-scale accommodation, which did not have a location tag on Instagram. All posts posted before the 31st of January 2022 were recorded and analysed. Due to the nature of small-town tourism at Chrissiesmeer, there was no need to isolate the posts to a particular period, rather all relevant posts were reviewed and coded. This allowed for the record to track back as far as possible. Of those that were reviewed and coded, the record was made up of a group of images that were classified according to this criterion:

1) Images of the outdoors
2) Images of the outdoors that included plants
    a) Images of plants that were in bloom
3) Images of the outdoors that included animals

The images were recorded using their dates, and all images of blooming flowers and images of any animals identified in this species were recorded to contribute to their particular contemporary phenological record (Fitchett and Fani, 2018). This study sought to exclude any 'older' posts that had been posted a while after they were taken. Although it was particularly difficult to determine the date the image was taken and later posted on Instagram, any posts that included nostalgic phrases or popular 'Throwback' Instagram phases or hashtags (#) were included from the record. Some examples of these phrases include "Throwback Thursday", "Good memories" or "Flashback" (Fitchett and Fani, 2018, 473). As the wedding venues identified in this study contribute significantly to the sample space of the phenological record, any images posted by accounts of photographers would likewise be excluded, unless the date the images were taken was explicitly stated (Mahlangu, 2018).

4.3. Data Analysis

The primary analytical tool this study employed was the triangulation of results. The triangulation of data or results approach was identified by Denzin (1987, in Flick, 2004), who discussed four forms of methodological triangulation. These include the triangulation of theories, investigator triangulation, methodological triangulation and triangulation of results (Flick, 2004). The triangulation of results is the use of a variety of sources, which share a difference in date of collection, place of origin, sample space and size, including those that are integrated to construct a singular coherent dataset (Flick, 2004). This approach prepares a dataset to reveal general themes and patterns that are reiterated at the various stages employed and thus, contribute to the reliability of the dataset (Flick, 2004; Kontsiwe and Visser, 2019). This approach aims to benefit the scale of this study, potentially address the scarcity of data available in association with Chrissiesmeer and provide an adequate and accurate depiction of the Chrissiesmeer tourism sector, as based on tourist and tourism operators' experiences of the town and their perceptions on the climate and environmental change and its potential effects on this sector.

As such, the key-informant semi-structured interviews, questionnaires and online reviews were analysed thematically and through 'constant comparison' between data (Lepp, 2007; Fitchett *et al.*, 2016; Mahlangu and Fitchett, 2019). The aim was to gauge the experiences and perceptions of tourists and tourism operators to determine the reality of the tourism industry in Chrissiesmeer, Mpumalanga. Each of these qualitative methods was used to map the tourism sector in the area and the historical annual events that have contributed to the

success of this small-town economy. Furthermore, the data was used to examine the challenges tourist operators and small-town business owners face in Chrissiesmeer, the motivating factors behind tourist visitation and any existing threats to the current tourism sector. Finally, trends in the perceptions of the future effects of climate and environmental change were assessed, to determine the importance and urgency to consider and implement any mitigative strategies to ensure the sustainability of this tourism sector.

Online reviews were coded according to the criteria listed above to identify particularly the content of each review posted by former tourists of Chrissiesmeer. Any mentions of the natural environment, plant and animal species, festivals or events, weddings and weather and seasonality, were recorded for the analysis of tourist experiences in Chrissiesmeer. Each coded text or image gathers from TripAdvisor, Booking.com and SafariNow were examined and later, each section was reviewed using basic statistical applications to identify themes for each criterion. These themes were identified through the use of specific terms, words, descriptive phrases, and the names of events, plant and animal species and other natural features (e.g., 'Lake Chrissie'). This analysis was based on assessing the regularity of use, which thus informed the themes associated with each criterion. These themes will be discussed further late in this paper, as the outliers that presented themselves in the dataset. Online review websites have grown to be lucrative methodological tools in academia, particularly in tourism studies (Connor, 2010; Hoogendoorn and Fitchett, 2018). TripAdvisor, Booking.com and SafariNow all provide former tourists with the opportunity to review the establishments and destinations a review based on their experiences through the collection and dissemination of user-generated content—reviews, ratings, photos, and videos—on travel" (Connor, 2010, 761). This is not only useful for tourists looking to visit these

establishments and destinations in the future, but it has also proven to provide researchers with a collection of authentic accounts of former tourists for the area or establishment in question. Although, it was arguable more difficult to identify fake reviews and illuminate them from the dataset, some warning signs identified by Keates (2007, in Conner, 2010, 762) "include[ed] scores that differ greatly from the average, mentioning nearby properties as superior and having written about only one hotel and visited the site only once—on the occasion that the review in question was posted." Reviews that fit any of these descriptions were carefully examined to minimise inauthenticity in the dataset.

This comparative contemporary dataset produced a short-term phenological record of the species identified in this study. This was "correlated to records of reported shifts for the same species or meta-analysis of seasonal species cluster in studies and literature, which have established global rates of change for each of the aforementioned species" (Mahlangu, 2018, 29). This dataset is compiled using the dates of valid Instagram posts that contained images of the plant and animal species identified in this study. These posts were assessed to ensure the accuracy of the date of each post. After the coding process mentioned above was complete, the contemporary dataset was formulated using the valid dates of the Instagram posts. These dates were categorised by, and according to the four annual seasons. As a collective, each phenological dataset was assessed to reveal a common range of dates throughout the years documented. The common range emulated from year to year is the basis for identifying a particular phenophase for the plant or animal species at hand (Fitchett and Fani, 2018; Mahlangu, 2018). These datasets are most useful in the absence of long-term phenological records, which is often the case in phenological studies of most plant and animal species across the globe and South Africa (Fitchett and Fani, 2018). Comparative

contemporary datasets provide the current phenophases of plant and animal species through the use of social media, which is beneficial because of the large scale and global reach of these platforms and the instant interaction. This means the timing of these posts is more accurate than any other web-based content, such as news and media sources (Mahlangu 2018), which allows time-specific accounts of the phenological processes of plant and animal taxon identified in such posts. Furthermore, literature that provides predictions of the future first-flowering-dates of plants and migration and population patterns of animal species would be reviewed to provide calculated estimates for the phenophases, and thus, the phenological future of nature-based tourism in Chrissiesmeer (Ohashi *et al.* 2012; Fitchett and Fani, 2018; Mahlangu 2018).

Overall, each recorded interview was transcribed and thematically organised to highlight key themes in the findings. The questionnaires were analysed using basic statistical applications to determine the trends of the data and thematic analysis, where data was arranged within themes to establish any pre-existing patterns and trends (Lee and Jan, 2015). The online reviews underwent a similar coding process to determine the trends of this dataset and following the completion of each stage, the full dataset was amalgamated to discuss similar trends from a variety of perspectives (Flick, 2004). The contemporary database identified the timing of events and the reoccurrence of annual events (Fitchett and Fani, 2018). This was interpreted into a future outlook for phenology-based tourism at Chrissiesmeer (Mahlangu and Fitchett, 2019). Not only was this method able to gauge the success or failure of phenology-based events, however, but the addition of the image and web content analysis to the qualitative methods also contributed a quantitative layer to the data, that determined a calculated estimate of the effects of climate change through shifting phenology (Fitchett and

Fani, 2018). This, in conjunction with the perceptions on climate change of tourists and tourist operators of Chrissiesmeer, relayed the importance and/or concern of climate and environmental change and assess the predictability and sustainability of this tourism sector in the future.

4.4. Ethical Considerations

This study required ethical clearance from the Human Resources Ethics Committee (Non-Medical) (HREC) of the University of the Witwatersrand. An application was submitted to the committee, including all the materials of this study. These were reviewed and accepted as seen in Annexure F, under Protocol number: H20/09/22. Participants of the key-informant interviews and the questionnaire were all provided with a detailed information sheet as per the requirements of the HREC. These detailed the aims of the research study, the role of their participation and the expected outcome of their contribution to the study (Annexures B and E). Participants of the questionnaire were informed that their participation was fully anonymous and regarding key-informant interview participants, as these are owners and representatives of small businesses and the tourism association of Chrissiesmeer. Their participation would not be entirely anonymised, due to the public nature of their businesses, nonetheless, no sensitive information of the interview participants would be shared and much of their identities would be protected. Lastly, interviews were recorded to ensure accuracy during the analysis process. All this information was provided to all interview participants, and each was asked to consent to the terms of the study by signing a consent form (Annexure C). Nonetheless, participants were allowed to withdraw at any point of their

choosing. Each of the participants of this study was over the legal age of 18 years and the study was determined to be at minimal risk by the HREC.

4.5. Limitations

One of the key limitations of the study was the sheer number of participants who responded to key-informant interviews and comprehensive tourist questionnaires.

Tourism operators were contacted virtually and telephonically before the upliftment of COVID-19 restrictions regulations, with little to no response through this medium. It was through two fieldwork trips conducted in March 2021 and September 2021 respectively, which increased the level of response through direct contact with potential participants. Another issue regarding the number of tourist operators' participants was the fact that single stakeholders often accounted for a variety of establishments canvassed in the study, which resulted in a far smaller sample space than expected at the start of the study. Furthermore, following the COVID-19 pandemic, a significant number of small businesses closed and, thus, these tourism operators were not available for participation.

Questionnaire response rates were low, despite the use of social media and the dissemination of posters in Chrissiesmeer itself. A generic post leading to the online questionnaire survey was posted on 20 to 30 Facebook groups and Chrissiesmeer tourism operator pages, including posts that were shared on LinkedIn and in personal WhatsApp groups through word-of-mouth. During each fieldwork trip, full scripts of the questionnaires were printed out to provide tourists in the area with the opportunity to fill

one in. However, on both occasions, tourism visitation was low. Furthermore, 15 posters including a QR code Valid to the online questionnaire survey platform were placed around the town centre and at popular establishments in town. Tourism operators were informed of how the poster and QR code worked and consensually agreed to place posters at their establishments. One consideration for the lack of response could be the extent of the questionnaire which included quite a few questions. More concise questionnaires could have potentially affected the rate of respondent participation.

The number of online reviews available on TripAdvisor for a substantial analysis of the data was unfortunately low. This is because quite a few of the establishments identified in this study were guest farms and, thus, did not appear as establishment profiles on TripAdvisor. The assistance of reviewing the same establishments on Booking.com and SafariNow contributed to the overall number of reviews. However, to receive a well-rounded holistic understanding of the experience of former Chrissiesmeer tourists and for clear trends and patterns to be identified through the dataset, the study would have benefited if the review count was higher.

A total of 279 online reviews were collected, 11 key-informant semi-structured interviews were conducted, and 12 comprehensive tourist questionnaires were answered.

4.6. Conclusion

This study aims to examine the Chrissiesmeer tourism sector, tourist and tourism operators' perceptions of climate change and climate threats, and the predictability and overall

sustainability of the tourism sector in Chrissiesmeer. To address the research aims and objectives, this study took a mixed-methods and triangulation of results approach to integrate various qualitative and quantitative sources. This was the basis for the assessment and identification of key themes and patterns which emerged through the dataset. The data collection was made up of key-informant semi-structured interviews with tourism operators, comprehensive tourist questionnaires for former tourists, online review analysis of Chrissiesmeer establishments, and Instagram image analysis that was later recorded as a comparative contemporary dataset for further thematic analysis and discussion. Each of the participants was informed about the aims of this study and the purpose of their participation, which were outlined under ethical considerations. Lastly, the limitations of this study and methodology were covered to address concerns with the scarcity of respondent numbers, and other challenges that were presented.

5. Results

5.1. Introduction

This chapter will report the findings of the methodology, based on the mixed-methods research approach. The results aim to identify and understand the climate- and phenology-related threats to tourism in Chrissiesmeer, Mpumalanga. This study aims to examine the towns' tourism sector, tourist and tourism operators' perceptions of climate change and climate threats, and the predictability and overall sustainability of the tourism sector in Chrissiesmeer. To do so, key-informant semi-structured interviews were conducted with tourism operators, a comprehensive tourist questionnaire was shared with former tourists of the area, online reviews from three of the top tourism review sites, globally and locally, and a contemporary phenological database was compiled. The findings of each methodological approach will be categorised thematically to reveal the importance of event-based small-town tourism and nature- and phenology-based tourism in the landscape of Chrissiesmeer's tourism sector.

5.2. Key Semi-Structured Interviews

A total of 11 interviews were conducted with tourism operators in Chrissiesmeer. The purpose of the key-informant stakeholder interviews was to get an understanding of the Chrissiesmeer tourism sector. Gauging the experience of small-town tourism operators and their perceptions of climate and environmental change determined whether any respondents were concerned about the potential effects of climate change. One of the more important portions

of the interviews was to ascertain the respondent's thoughts and experiences of tourism in Chrissiesmeer, nature-based and events-based tourism as well as the influence of wedding tourism specifically in Chrissiesmeer. Response rates were better during two field trips taken on the 30th of March 2021 and the 22nd of September 2021 respectively. Of the 11, 10 interviews were conducted in person following COVID-19 social distancing protocol and one was conducted telephonically, which was organised through a referral by one of the initial interview respondents. A total of 22 businesses were profiled (Annexure A) and contacted. However, email correspondents were unsuccessful and thus, no interviews were organised via email. The majority of the responses were conducted during fieldwork.

Table 1 Tourism Operators Demographics.

Respondent (R)	Establishment	Position	Time Living/Work in Chrissiesmeer
1	Establishment A *Including a small convenience store and bottle store*	Manager	Since 1999
2	Establishment B	Owner	Since December 2019
3	Establishment C Establishment M Establishment N	Owner	Since 2013
4	Establishment E	Staff Member	Since 2017
5	Establishment F	Owner	-
6	Establishment G	Manager	Since 2014
7	Establishment H	Owner	"For 7 years"
8	Establishment I Establishment J Establishment G Establishment E	Owner	Since 1999/2000
9	Establishment K (Wedding venue)	Owner	Grew up in Chrissiesmeer (1961)
10	Establishment L (Wedding venue)	Part-Owner	Launched in 2017
11	Establishment L (Wedding venue)	Part-Owner	Grew up in Chrissiesmeer

5.2.1 The Tourism Sector of Chrissiesmeer

5.2.1.1. Events-based tourism

This section aimed to examine the extent to which events contributed to tourism in Chrissiesmeer, by engaging respondents about their experiences hosting and attending events in the town. The respondents often mentioned the Frog Night, Crane and the Flamingo Festivals. With a similar number of mentions of Wildflower Day, many shared how the benefits of hosting these events had contributed significantly to the tourism sector throughout the years. The majority of tourism operators emphasised the role of weddings and the way wedding tourism in the area contributed to tourist visitation throughout the year. This section will examine the trends in events-based tourism in Chrissiesmeer.

5.2.1.1.1. Chrissiesmeer: Annual Events and Festivals

All of the respondents, excluding all three wedding venue respondents, mentioned the Frog-Night Festival. The event "happens in the first week of December" (R3) and has been said to occur annually according to the majority of the respondents, after "the first heavy rains" (R4). The history of the events is said to span back "18 years… [and this] could be longer" (R3). Each of the eight respondents mentioned that Chrissiesmeer is well-known for their annually Frog-Night festival, with Respondent 1 calling the event the town's "big thing". Through this event, businesses in the area experienced an increase in tourist visitation and thus, a boost in business. Respondent 3 mentions that it usually brings in around "150 to 200 people", which the town struggles to accommodate, saying that "It's not a lot, but [that] it's a lot for

Chrissiesmeer". This illustrates that this event is a town-wide event which incorporates all areas of the tourism sector.

One respondent shared some concerns about the event and a potential population decrease in the frog population. Respondent 6 stated that the area is "known for having bullfrogs" and following an evaluation of the frog population "in 2016, [it was reported that Chrissiesmeer] had a shortage [of the frog population]" as compared to the previous year. All remaining respondents were not concerned about the longevity of the event, nor the potential changes to the phenological patterns of frog species in the area. Most of these respondents believe that the Frog-Night Festival would continue in the future because of the reception the town receives from tourists in previous years. Respondent 2 mentioned that "the people are positive about the Frog-Night festival" and that they believe that the event would be a part of the Chrissiesmeer tourism industry for years to come.

Respondent 1 believes that the decrease in tourist attendance of the Frog Night Festival over the past year (December 2020) was an effect of the COVID-19 pandemic. The owners of Establishment A had hosted the Frog-Night Festival on a few occasions, and similarly, Respondent 3 had hosted the event on a few occasions. It appears that the hosts of the annual event change from year to year and there is, thus, no structure to the organisation of the event. Respondent 8 believes that "there are…no more festivals" because of the lack of cooperation between business owners in the area.

Only three of the respondents mentioned the Crane Festival held in Chrissiesmeer. An additional respondent mentioned a festival "around birds" that the local church occasionally hosts, however, they did not specify any further details about the event. The event usually

occurs in “June [or] July” (R4), during winter, where tourists and birdwatchers can partake in various bird-watching activities. Respondent 8 identified “a big group of Crested Cranes” they had witnessed during a festival “a few years” back. Respondent 3 mentioned that Blue Cranes and Grey Crowned Cranes can be found in the area and specified that both these are listed as endangered species. The respondent went on to mention that the bird species mainly gather and settle in areas “on private land and the owners don't mind” providing access to tourists to visit these areas. Likewise, Respondent 4 added that the Crane Festival is contingent on “the farmers…allow[ing] us [to] drive with people who have come to see the cranes” and that organisers of the event need to set “pre-organised agreements with [the local farmers]” for the festival to occur.

As the Crane Festivals is one of the more well-known events held in Chrissiesmeer, it is of interest to consider why the majority of the respondents did not comment on the event. Of those that did, two respondents mention that the event had been cancelled in 2019 for two main reasons. Respondent 3 mentioned that this birding event “stopped last year because of [a lack of] financing” and due to “population counts” conducted on the bird community annually. Respondent 8, who states that there “used to have a Crane Festival” that occurred annually, believes that there are “no more festivals” in Chrissiesmeer because there is an apparent lack of organisation and cooperation due to “a lot of strife amongst the players”, referring to the business owners in the town. This was in line with the commentary on the Frog Night Festival.

The Flamingo Festival is likewise a popular event held in Chrissiesmeer, and there were more comments made on the Flamingo Festival than the Crane Festival. The Flamingo Festival occurs during the birding season (during the summer months October to March), and apart

from the flamingo species itself, the more notable theme through interviews was the absence of flamingos in the area.

Out of the five respondents that mentioned the Flamingo Festival, four mentioned that the prolific flamingo population in the area had all but disappeared in the Lake Chrissie area and reportedly relocated to a different area. Respondent 2 mentioned that the flamingos had "migrate[d] somewhere and [did not] come back". Respondent 3 attributes the migration of the flamingos to the pollution of the Lake Chrissie water. "For the last six years, the pumps haven't been working". This respondent was referring to the sewage waste management plant that had been pumping sewage waste material into Lake Chrissie due to a failure at the plant. None of the respondents specified the details of the plant failure. Nonetheless, as a result of the water pollution: "we don't get any flamingos anymore", Respondent 3 stated. Respondent 5 concurs. This respondent mentioned that the "lake used to accommodate a lot of flamingos [before] sewage [was] flowing into the lake". Respondent 3 believes that the flamingos migrated "elsewhere in the area, but [stated that] they don't come around [Chrissiesmeer] anymore". In particular, the area around Murder Rock is where Respondent 7 states they have seen flamingos. However, this respondent believes the flamingos migrated due to the lake losing water volume, stating "it's getting dry now...they're gone now".

Similarly, only three respondents spoke about Wildflower Day and broadly about the wildflower season. Respondent 7 recalled his time in Chrissiesmeer being marked by wildflowers that bloomed along roads spanning to Carolina, while Respondents 3 and 4 mentioned Wildflower Day specifically. Respondent 3 mentioned that the event has held annually in January, with Respondent 4 mentioning that it is held specifically between the "first and second week" of January.

Respondent 3 mentioned that the “frogging event” and the Wildflower Festival had a history spanning back “15 years“ or “18 years…could be longer”, according to their knowledge and experience. The flower species that can be found in the area during wildflower season include “indigenous wildflowers” such as “orchids” (R3) and the “African wildflower orchid…that can only be seen in this area” (R4). Respondents 3, 4 and 7 describe the wildflowers as “beautiful”, and “stunning flowers”. However, while mentioning the wildflowers, Respondent 4 mentioned that “there [wa]s a shortage of bees” in the area which they believe was affecting the quality of plants, and specifically the apple trees in the area. When asked to elaborate on their comment, they stated that “in [their] opinion, [the bee population] has decreased”, however, they were not particularly sure about what was causing the decline in the bee population.

Establishment E, in connection with Establishment J, mentions that they have hosted a craft beer and liquor festival in Chrissiesmeer. Four respondents spoke about the Lake Chrissie Craft Liquor Fest and joint farmers/street market. Respondent 3 says this festival contributes to a boost in tourist visitation and business output for Establishment E and similarly, for Establishment J and Establishment I. Respondent 3 mentioned that it contributed to increased tourist visitation rates for the whole town too. This event is usually hosted in the shared courtyard of Establishment J, Establishment E and Establishment I at the “end of October/[the beginning of] November” (R4). Respondent 5 stated that the event had been occurring for “three years” and Respondent 3 added that it had been occurring until “the year before lockdown”.

Apart from the pandemic halting the event, Respondent 8 mentioned that the lack of continued success is due to the low number of tourists that attend the event. The respondent

when on to say that the town of Chrissiesmeer “cannot accommodate more than 60 couples”, and in their experience, the respondent noted that a business “cannot throw a successful event with just 60 couples, because you need about 120 just to cover costs.” Furthermore, they mentioned the lack of community cooperation. The respondent believes that “if [they] organise something, then people pull away”, referring to other business owners in the town, which the respondent believes affects the successes of events they host, such as the Lake Chrissie Craft Liquor Fest.

5.2.1.1.2. Chrissiesmeer: A Destination for Private Events

All respondents mentioned weddings during their interview, with a large majority going into detail about the influence wedding tourism has on their businesses in Chrissiesmeer. Of the respondents, four represented wedding venues in the area. These include Establishment K, Establishment L and Establishment A.

The wedding venue that was mostly mentioned during the interviews was Establishment K, a longstanding wedding venue and a top wedding destination in the Highveld region, with an extensive history in Chrissiesmeer. The majority of the respondents mentioned that weddings at Establishment K contribute largely towards tourism in Chrissiesmeer. In general, weddings in the area contribute to the overall benefit of the town. Respondent 3 mentioned that “every weekend [is] full” at Establishment K, which meant that weekends would be busy due to the “influx of clientele because of the wedding venues”, Respondent 4 mentions. Thus, the businesses in Chrissiesmeer benefit from the “overflow of the big weddings” (R3). Likewise, Respondent 4 states that Establishment E experiences the most clientele during weekends

specifically. Respondent 4 confirms, by saying that Establishment E "also have a lot of influx of clientele because of the wedding venues so…Thursday, Friday, Saturday, [the store has] a bump in sales". When asked if weddings contributed to tourist visitation to their establishment pre-COVID-19, Respondent 8 simply stated "big time", mentioning that "it was the reason why [the town was] busy on weekends". "We (Establishment A) have just really benefited from this wedding venue", Respondent 1 went on to say.

Establishment K books an average of 50 weekend-long weddings a year and Establishment L hosts 48 weddings during their first year of operation (2019). Although Establishment K and Establishment L wedding venues are usually fully booked throughout the year, Establishment L respondents mention that they experience two peak seasons during the year. The Establishment K respondent did not specify a peak season. Similarly, Respondent 1 mentioned that they experience a demand for their wedding services "through the year" and answered "no" when asked if they experience a peak season. The Establishment L respondents mentioned that they experienced the most amount of demand between September and May. At the time of the interview, the wedding venue had secured booking "until the 21st of December (2021) and then from the 6th of January to the end of May (2021)" (R10). This included "some bookings in September October and November" (R10) of the following year. Similar to Respondent 4's experience, Respondent 11 attributes their March to May peak season to the public holidays during this time of the year. Apart from this, Respondent 11 mentions that it is also attributed to the weather, stating:

"*It's the best weather. The rainy season is gone, the days are still nice and warm, and the sunsets are amazing. It cools down during the evening, so we can maybe light a fire or*

so. That's just actually the best weather and the weather plays a massive role." – Respondent 11

As both weddings receive clientele throughout the year, the weather was mentioned on a few occasions. The respondents of both the Establishment K and Smithfield wedding venues said they receive quite a large amount of booking requests for the summer dates and similarly experience the same for winter dates. Respondent 11 speaks of how some wedding guests are seeking "the winter feeling" and "especially the photographers like the winter, with the leaves - it makes different pictures during the winter". Some former wedding hosts have shared that they do not want "hot weather" (R11) for their wedding and thus, opted to host their wedding during the cooler seasons of autumn and winter. Respondent 8 mentioned that in winter "the sky... is crisp blue and not the same" as the sky in summer which makes the area incredibly beautiful through imagery in winter. Furthermore, brides and grooms prefer a "March wedding instead of a November wedding just because of this chance of rain" (R11) could potentially experience during the summer season. The respondent jokingly said that it felt that there was a time when "it would only rain on a Saturday", which is why a bride needs to "like [their] rain plan". Respondent 10 mentioned that "for the bride, there's a lot of aspects that need to fall in place" which is why the venue worked to provide indoor or outdoor weddings for any weather conditions. Both respondents mentioned that this is only made possible because they entirely isolate the entire venue to one wedding party per weekend, and thus, the organisers can make any changes to the proceedings should there be changes in the weather. This is shared by Establishment K. Wedding ceremonies can be held in the Forest chapel, but if rain occurs, the wedding venue can move the ceremony indoors.

In terms of the natural environment, each of the wedding venues relies on outdoor spaces for the profitability of their business models. Establishment L and K are both located on farms and have access to unique natural features. Establishment K has a large pan at the entrance of the venue, with a forest chapel for wedding ceremonies. The Establishment L farm has the Vaal River channelling through its premises. Respondent 11 said that the venue "pride ourselves in saying that it's the Vaal" River and that they "want everyone to see it". Establishment A is located at the entrance of the town and not on a farm, unlike the larger two wedding venues, however, Respondent 8 mentioned that the establishment is known for its pristine gardens. Each of the respondents mentions that most newlywed couples prefer taking their wedding pictures outdoors, particularly "in front of the pan" at Establishment K and "most of them…down by the river with the sunset" at Establishment L. Similarly, newlyweds enjoy the overall landscape and scenery at Establishment L, as each of the respondent's mentions. Respondent 11 spoke of "the river and the ravine…the cedar trees [that are] 100 years old and the oaks [which] are 65 years old". The respondent called these "amazingly beautiful" and "something that you just cannot buy". They believe that these factors play a large role in the success of their wedding venue.

Apart from large-scale events, Chrissiesmeer is likewise a good option for tourists to host their private events. The majority of the interview respondents had either hosted or attended a private event in the area. Respondent 6 believes that Chrissiesmeer is the perfect destination for tourists who "want a break, [and are] tired of the city" because it would allow them to recharge in a small town. Respondents 2, 3 and 7 all spoke about hosting birthday parties in the areas for relatives, with Respondent 2 getting married at a local farm in the area. These events, albeit on a smaller scale, contribute to tourist visitation through VFR. Establishment

A is also known to host events such as “Mother's Day buffet, [and] birthday” celebrations, apart from weddings. Respondent 4 mentioned that “since they fixed the road (M17), now we get a lot of bikers coming through this way and [that] it's nice that we have the people coming through”, despite the amount of “the noise or the air pollution” that comes along with them. Nonetheless, the respondents say that they appreciate “the fact that it brings customers and tourists”. Personal events, unlike planned and periodic events, are sporadic and completely dependent on the personal details and preferences of the host, and thus is hard to track the frequency, quantities, and trend of such events. Nonetheless, they are said to contribute to business productivity in the area.

On the other hand, personal events hosted and attended by the respondents likewise impact the operations of businesses in the area. The occurrence of an event, large-scale or personal, can be the determining fact of whether a business’s doors are open or closed. Respondent 1 had closed Establishment A, their adjoining convenient store and liquor store early on a Saturday afternoon because they needed to attend an event at a family farm. Establishments, such as Teen Die Meer and the wedding venues, are all open to being fully booked out to guests to host personal events, providing no access to visiting tourists in the area. In this regard, businesses can be closed by business operators who are guests or by business operators who fully dedicate their facilities and services to one singular private event and thus, this can alter the access to visiting tourists, thus, business and potential returning visitation.

5.2.1.2. Nature-Based Tourism

The nature-based tourism and the events-based tourism in Chrissiesmeer are incredibly integrated. The tourist activities that exist in the area are the basis for the events held in the area and conversely, most tourist activities are caused by events and festivals held in the area.

When asked what the most popular tourist activities were, most respondents mentioned fishing. It is an activity that a few of the respondents participate in themselves and one they hope to expand in their own right. Respondent 1 would like to open their own fishing business, as they believe that the “dams” are lucrative. In their experience, Respondent 1 stated that many people have travelled "from far to come and fish here”, “because the dams are the [biggest] thing around here”. Respondents 7 and 2 likewise fish in the area and mentioned that the most popular fishing spot in Chrissiesmeer is Teen Die Meer and the NGK’s Gennesaret fishing and camping site and Miss Chrissie Country House. As this is one of the only tourist activities in Chrissiesmeer that does not have an event hosted around it, this peak season is entirely dependent on the historical success and marketing strategies of each fishing site. However, no respondents went into detail regarding the effect of fishing on their businesses.

Birding was highlighted as one of the more popular tourist activities, which a few of the respondents partake in. Chrissiesmeer is a popular birding location and tourists can travel around the area throughout the year to view birds. Although the birding season has its peak season, which is usually between September and March, the birding events are both hosted during the winter, particularly in July. At the time of their interview (March 2021), Respondent 4 mentioned “in the past 3 months” business at Establishment E (craft liquor bar) had

benefited from birding, so much so that they felt the store “need[ed] to make a bird drink”. Conversely, during the same period, Respondent 3 stated that the “birding at the moment is not” at its best but did not compare this season to any other season in particular.

Some of the bird species identified by interviewees were cranes and flamingos, which were mainly identified the respondents discussed the annual events. This is the same with the frogging community, as mentioned above. Other mentions of bird species were included concerning the birding seasons. Respondent 4 mentioned a recent sighting of the Steppe Buzzard bird “which can be seen in Russia”, leaving the respondent to note that Chrissiesmeer does not “just have human tourists, [they] have bird tourists” too. This respondent “definitely would like to see more birding” in the area, because they believe that “a lot of us have lost [a] connection to nature in this community", which they believe birding could revitalise. Respondent 8 would like to capitalise on the birding in the area, by implementing a birding program, organised by recent “ecology graduates”, that would provide tourists with guided birding trails in organised transportation. The respondents noted that the need for each tourist to have a 4x4 themselves may deter some tourists from following the birding trails themselves and hope that this will be a solution to the problem.

5.2.2. Perceptions of Climate Change

Two of the respondents believe that not enough stakeholders care about the effects of climate change in Chrissiesmeer, with Respondents 1 and 5 stating that they believe that “nobody cares around here”. Slightly less than half of the respondents mentioned that they do not know much about climate change to make an informed decision on the matter. When

asked about climate change, Respondent 2 mentioned that “[they] don't know, [as climate change] is the one thing I don't have any knowledge on”. Similar sentiments were shared by Respondents 6 and 5. Respondents 9, 10 and 11 mentioned that they believe that climate change is primarily a natural process of the earth, all to some degree stating that they “don't really know [much about climate change, however], there's obviously something going on, but [their] personal opinion is that that [they] don't think anyone on earth has been on here long enough to know what a 10000-year-old a long cycle goes on” (R10). Respondent 9 added: “the world is in a cycle, so you also don't know if it's a cycle.” Respondent 9, however, does “think it is happening”.

Half of the respondents agree with Respondent 9 and mentioned that they believe that climate change is or will occur. Respondent 4 said that “[they] believe it's in existence” (climate change). The respondent went on to say:

“*We've seen it ourselves, so is climate change not actually happening? Can we not see it? Can we not acknowledge that it's happening? That's my feeling on it*”. – Respondent 4

Most of the respondents, however, did not express any concern regarding the potential effects that climate change could have on the Chrissiesmeer area, while two respondents explicitly expressed the opposite. Respondent 3 mentioned that they have concerns about environmental change and the effect that environmental change will have on the Chrissiesmeer area and the tourism sector. This is a sentiment shared by Respondent 3, who detailed the environmental changes that already affected the tourism of Chrissiesmeer (the migration of the flamingos and the threat of future mining endeavours in the Chrissiesmeer area). Of the remaining respondents, three mentioned that they do not believe that the

effects of climate change would affect tourism at Christmas or their businesses. Respondent 9, who grew up in the area, recalls how they used to experience “snow every second year and [mentioned that Chrissiesmeer does not] get it anymore”. Nonetheless, when asked whether they were concerned that climate change would affect their business, the respondent said: “I only have 20 years left, so I don't think in my time”. Similarly, Respondent 11 mentioned that they believe that climate change is a “reality [and a] part of a natural change”, and “in the bigger picture, the biggest effect”, Respondent 10 says they “don't think we'll be around to see if it really affects us”.

5.2.2.1. Climatic, Environmental and Tourist Waste Observations in Chrissiesmeer

A few respondents mentioned pollution from the mines that affect the area and the concerns they have with the potential of future mining endeavours in the area. Respondent 7 states that because Chrissiesmeer is a protected area and such, “[mining companies are] not allowed to mine” within “ten kilometres around Chrissiesmeer” (R7). This, however, does not exempt the area from being affected by mining activity occurring in the surrounding area. Apart from the littering Respondent 5 had witnessed, Respondent 4 spoke about air pollution, in the form of what the respondent describes as “pockets coming through from the mine” and a smell in the air from the coal mines that blow through Chrissiesmeer. The respondent mentions that “when you clean- when you dust, we get soot” (R4). Respondent 7 speaks about the effects mining will have on historical and environmental monuments, such as Murder Rock. This respondent says that “mines are terrible” because they believe “Murder Rock is going to fall down because they're mining there”.

As previously mentioned, another concern of a few of the respondents was the environmental changes they have witnessed that had begun to affect tourism in the area. Respondent 7 stated that there used to be “flamingos on the lake” and they believe that the reason behind their migration was that the lake “is getting dry now”. Other respondents attribute the migration to water pollution of the lake, where sewage has been diverted into the lake due to infrastructure failure. Respondent 3 alleged that “for the last six years, the pumps haven’t been working” at the sewage and waste management plant, and this “[was] causing sewage to leak into the dam”. The respondent made efforts to notify officials and environmental organizations in an attempt to solve the issue to no avail. The *Mototo trail*, a “nice of a walk down to the lake” and popular tourist activity in the town, had been closed due to the pollution and an additional result: “we don't get any flamingos anymore” (R3). The respondent also mentioned that fish poaching and the use of netting were badly affecting the area but did not elaborate any further.

When asked about the waste practices of tourists, the responses were split between two opposing experiences. The first was a group of respondents who had mentioned that tourists were respectful of their environment during their visits, while the other half of respondents mentioned that they experienced significantly more litter when tourists visited their establishments.

The first experience was shared by respondents, all agreed that Chrissiesmeer had an issue with littering and pollution, however, believe that tourists did not contribute to the issue. Respondent 3 mentioned that “[Chrissiesmeer’s] got a shocker” when asked about any pollution in Chrissiesmeer. However, this respondent, much like Respondent 4, would “blame franchises for pollution” and spoke about the mining for much of the pollution caused in the

area. Respondent 4 believes “the biggest issue [in Chrissiesmeer] is trash” and that educating the younger generation will help with the littering issue, despite this being jointly a “municipal issue” and a failure of service delivery dates. The lack of municipal support is a sentiment shared by all of the respondents.

Regarding tourists, Respondent 6 mentions that some tourists do tend to litter, especially those in transit that “throw litter outside their car windows”, while other tourists tend to “stop and help [the respondent] when they see [them] picking up [litter]” in that area. The respondent said that “we are not the same; [and that some] don’t care about nature”. Respondent 8 stated that if there was litter in the area, “it's not tourists, it's actually us”. They also stated that because they “are not that big in tourism”, they don't experience too much of an issue with littering. Similarly, Establishment L respondents likewise did not experience any excessive issue with littering outside of the usual expected amount. The respondent believes that “the type of client [they] get is [their] type of people that want to get married in the country on the farm” and thus, that respect environment and do not litter. When Establishment L clients leave after a wedding, usually “it looks very much like the way [the premises did when] they first arrived”.

Conversely, a few respondents mentioned that tourists do contribute to litter in the area and other establishments. When asked if Establishment K experiences any issues with littering, the respondent mentioned that “real tourists don't litter” and in their experience, “it's the black people” that tend to litter the most. The respondent believes that “with the black people- they’re not tourists [and thus,] they just carry on like normal”. Establishment L’s respondents believe that “tourists, that aren't local, are more conscious and won't just litter”

and that “it's mainly locals” and “uneducated people [who] just have no, no, no respect for nature” (R11).

5.2.3. COVID-19 Pandemic and Tourism in Chrissiesmeer

All of the respondents spoke about the effects the COVID-19 pandemic had on their businesses. One respondent spoke of how the pandemic and the protocols set in place by the national government led to the closure of two of their guest houses. The respondent mentioned “how many guest houses [they had to] closed because of lockdown” (R3). This respondent also spoke of how they had intentions to sell their cafe because they were planning on relocating to another area following the pandemic. This was not the only guesthouse in the area to have closed. Another respondent was in process of purchasing a recently shut down guesthouse in the town’s centre. This was verified by Respondents 8 and 9, as Respondent 9 was the new owner of the guesthouse. There was no response when contacted. The full extent of the closure of businesses in Chrissiesmeer is yet to be known.

Apart from the closure of businesses, the pandemic mainly affected the operation of small businesses in the town, since businesses had to close their doors for an extended period. Similarly, because cross-country travel was restricted at large, travelling for tourism was prohibited as tourism was not listed as an essential service. The five-tier lockdown restrictions system set by the National government detailed the restrictions on the South African population and industries, such as tourism and other services. Some examples include the sale of alcohol and the hosting of events that were only prohibited under Level 3 lockdown to Level 1. Respondent 2 mentioned how the COVID 19 lockdown regulations to “close…down

the bottle store and the borders" reduced the number of tourists that were passing through the area that would feed into the business, whereas this directly affected Establishment A, as the lodge jointly owned a bottle store and a convenience store. Similarly, Establishment E was closed throughout periods where the restriction of alcohol was enforced nationwide. The lockdown periods were sporadic, as these measures were responsive to the haphazard nature of the coronavirus, and thus it made it difficult for industries at large and the tourism industry to predict and adequately prepare for lockdown Levels 3, 2 and 1 time periods when non-essential business would be able to operate.

A few of the respondents mentioned that they particularly struggled with the implementation of lockdown regulations because tourists and residents in the area simply did not oblige to the laws. When asked about their experience enforcing COVID-19 protocol, Respondent 3 mentioned that there is a "total disregard [in Chrissiesmeer] and the worst thing is that we lose business". This presented a unique issue for the respondent as many of their staff "are high-risk" citizens. Furthermore, the respondent mentioned that tourists that came in felt noticeably uncomfortable at the lack of COVID protocols enforcement in Chrissiesmeer, which led tourists to leave the small town to avoid potentially contracting the virus. Respondent 3 describes this loss of business as "the harsh reality of tourism". Respondent 4 similarly mentioned that they struggle with "keeping up to standards and sanitization" set aside by COVID-19 safety regulations, "because everyone wants to touch and…smell [the product]". Nonetheless, the respondent mentioned that they "try their best" (R4) to enforce these laws.

Respondent 3 mentioned that the Chrissiesmeer "economy [was] depressed which already started before lockdown" and mentioned how COVID further led to mass job loss and salary cuts. "It's scary", Respondent 3 reflected. This is a sentiment shared by Respondent 6.

Respondent 6 “thought [they were] going to lose [their] job”, but the store started selling their products online and then “business start[ed] to peak”. The respondent was called back to organise the online orders for shipping. Respondent 5 mentions how the number of overseas tourists had drastically reduced and “now [it was] mainly local tourists”, which had decreased a large portion of their client base. This respondent mentioned that they are wary of future threats of another widespread disease/virus outbreak and the effects on the tourism sector as with the COVID-19 pandemic.

With regards to the payment of staff salaries, Respondent 2 mentioned that they received a single payment from a government entity, which they used towards paying the cafe’s employees throughout the pandemic. This respondent mentioned that their “priority is [their] staff”. Respondent 8 likewise received a similar subsidy that covered the salaries and wages of their employment throughout the COVID 19 pandemic leaving the respondent to say that they were “not affected” by the pandemic at all.

Had the COVID-19 pandemic not happened, most of the respondents mentioned that they would have freely and openly continued operating throughout the year. Establishment B was fully functional throughout the year, with Respondent 2 mentioning that “if it's not COVID then [they’re] open”. Furthermore, Establishment E (whose primary product is liquor) “could have had a lot more sales” if it “were not for COVID”, Respondent 4 added. Respondent 4 states that Establishment E only closed due to COVID-19 alcohol restrictions and that before the pandemic, the store remained open “throughout the year”. The two wedding venues, Establishment K and Establishment L had both been operating at +90% capacity before the COVID-19 pandemic. Responded 9 stated the following:

"*What will stop weddings in general? A war and COVID was a bit like a war*" – Respondent 9

Albeit the losses incurred during the COVID-19 pandemic, Respondent 9 stated that "people will always fall in love and always want to get married". As such, Respondents 8 and 10 both mentioned that they find the need to "catch up" on business when the lockdown restrictions were lifted to recuperate the losses. Although, Respondent 11 mentioned that the venue had secured bookings for a year in advance at the time of their interview. Apart from Respondent 8 who, as mentioned above, believes that they were not financially affected by the COVID-19 pandemic, none of the other respondents mentioned any hopes of recuperating from the financial losses they incurred during this time.

5.3. Comprehensive Tourism Questionnaires

A comprehensive questionnaire was designed for tourists to ascertain the travel patterns and travel preferences of former Chrissiesmeer tourists. This questionnaire included questions on their experiences in Chrissiesmeer, thoughts on the state of the environment in the area and perceptions on climate change and the climate future of travel and tourism at Chrissiesmeer.

5.3.1. Demographics

As Chrissiesmeer is a small town, the questionnaire was constructed to acquire a comprehensive amount of information from each prospective respondent. Only 12 general questionnaires were filled out by former tourists. The demographics of the sample size varied across the age, gender, and highest level of education of the respondent (Table 1). All the respondents were residents of South Africa and predominantly originated from the province

of Gauteng or Mpumalanga. The respondents visited Chrissiesmeer between one time to four or more times both during the week and the weekend during all seasons, as detailed in Table 1.

Five of these respondents travelled with friends when taking their trip. Three respondents travelled to Chrissiesmeer with their colleagues on a business trip. Two respondents travelled alone, and two others travelled with family members, and with children. All respondents travelled to Chrissiesmeer using a personal or hired car. Each respondent cited different reasons for visiting Chrissiesmeer (Figure 8). The most popular choice was 'for the scenery', which was followed by the opportunity 'to visit family'. One respondent added that another reason they travelled to Chrissiesmeer was for "photography and research". Each of the respondents chose a unique selection of the reasons they travelled to this small town for.

Table 2 Demographics, travel details and patterns of questionnaire respondents.

Respondent	Age and gender	Place of residence	Highest level of education	Times visited Chrissiesmeer	Length of Trip	Season
A	25 – 39 Female		Postgraduate Degree	2 – 3 times	For a weekend	Summer
B	40 – 60 Male	Mpumalanga, RSA	Postgraduate Degree	4 of more times	1-2 weekdays	Autumn
C	40 – 60 Female	Mpumalanga, RSA	Undergraduate Degree/Higher Education Diploma/Certificate	4 of more times	1-2 weekdays	Spring
D	40 – 60 Female	Mpumalanga, RSA	Postgraduate Degree	2 – 3 times	1-2 weekdays	Summer
E	40 – 60 Female	Gauteng, RSA	Postgraduate Degree	Once	For a weekend	Summer
F	25 – 39 Female	Western Cape, RSA	Undergraduate Degree/Higher Education Diploma/Certificate	Once	For a weekend	Summer
G	25 – 39 Female	Gauteng, RSA	Undergraduate Degree/Higher Education Diploma/Certificate	Once	For a weekend	Autumn
H	25 – 39 Female	Gauteng, RSA	Four-Year Degree/Honours	Once	For a weekend	Winter
I	18 – 24 Female	Gauteng, RSA	Four-Year Degree/Honours	Once	For a weekend	Autumn
J	40 – 60 Male	South Africa	Undergraduate Degree/Higher Education Diploma/Certificate	4 of more times	1-2 weekdays	Spring
K	25 – 39 Male	Mpumalanga, RSA	Undergraduate Degree/Higher Education Diploma/Certificate	4 of more times	For a weekend	Summer
L	40 – 60 Male	Mpumalanga, RSA	Four-Year Degree/Honours	4 of more times	1-2 weekdays	Spring

When asked if they were aware that Chrissiesmeer offered the tourist activities listed in Figure 9, six respondents claim that they were aware of most of the tourist activities, while two others were aware of the full range of tourist activities offered in the area. All questionnaire respondents stated that they would return to Chrissiesmeer in the future.

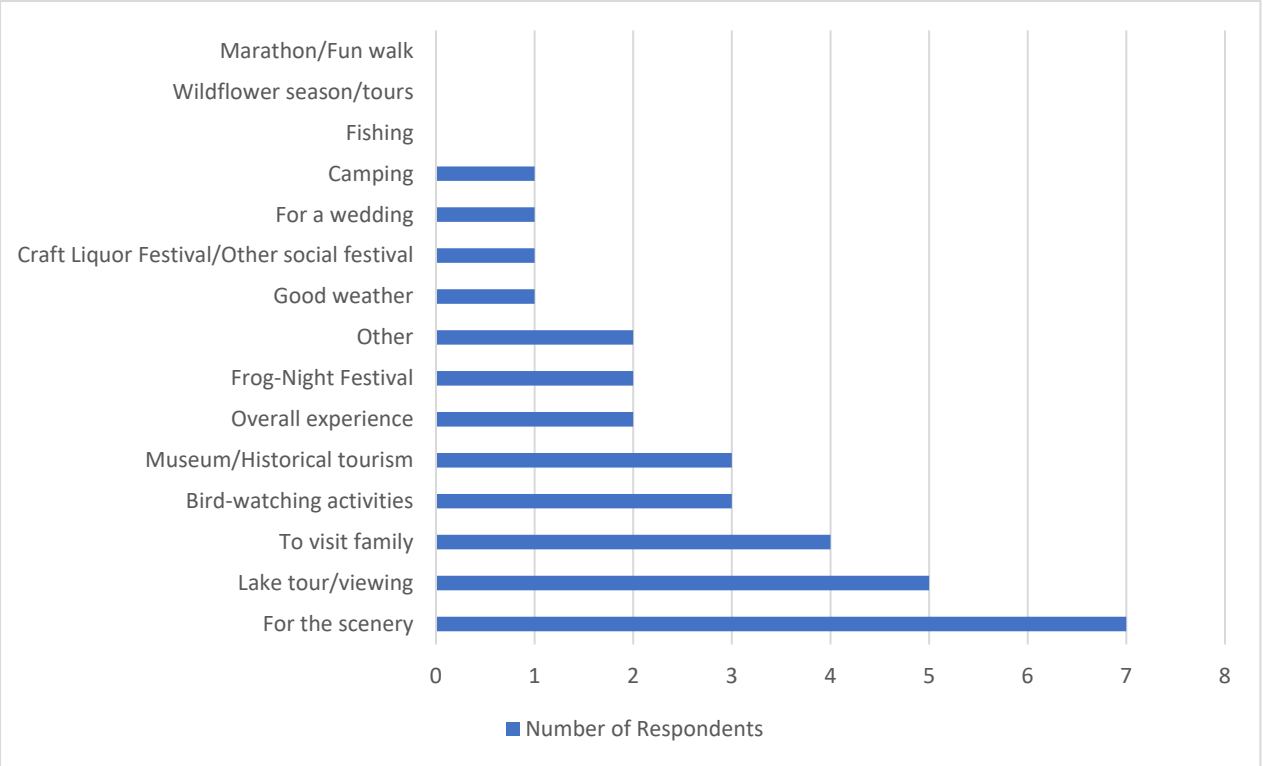


Figure 9 Travel motivations of former tourists for their trips to Chrissiesmeer.

5.2.1. Nature and Natural Environments

On their respective trips to Chrissiesmeer, 11 out of 12 respondents mentioned that they visited a farm, any of the lakes or pans, and/or any areas of the surrounding natural environment. Respondent G did not. When asked if each of the respondents had engaged in any nature-based tourist activities, i.e., camping, fishing, wildlife, or lake touring or went to the Frog-Night festival, eight respondents answered “yes”, while four respondents answered

“no”. On a scale of one to ten, each respondent rated the importance of nature or natural environments when planning a trip their trip. This category included greenery, gardens, the veld, beaches, and any natural water sources. The only options that were selected were eight, nine and ten. Eight respondents rated the importance of nature or the natural environment a ten out of ten. Respondent J rated the importance of nature and the natural environment a nine out of ten. The final three respondents rated the importance of nature and natural environments as a part of their trips an eight out of ten.

Similarly, each respondent was asked to rate how much they enjoyed seeing or interacting with animals when they were on holiday on a scale of one to ten. In both instances, a rating of one meant “not important at all” and a rating of ten was “very important”. The responses to this question were more varied. Interaction with animals on holiday was more scattered than the importance of nature and natural environments as seen in Figure 10.

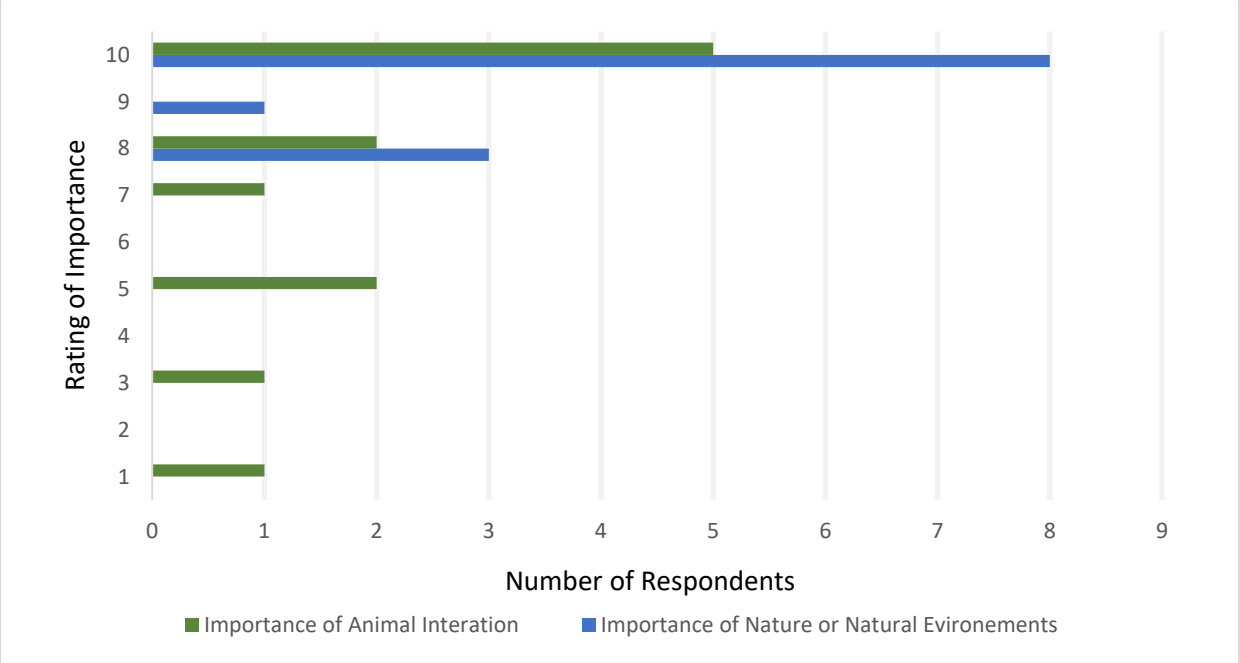


Figure 10 Respondent Ratings of the importance of nature and animal Interaction on holiday.

When asked to react to the following statement: “I am more likely to visit a destination with natural appeal rather than a destination in the city for a holiday”, all the respondents either “agree[d]” or “strongly agree[d]” with the statement. Nine of the respondents strongly agreed with the statement, while the remaining respondents chose to “agree” with the statement.

5.3.2. Tourism at Chrissiesmeer

5.3.2.1. Small-towns and Small-town Tourism

Half of the respondents planned their trip to Chrissiesmeer because it is a small town. Respondents B, C, D, F, G and Respondent I travelled to Chrissiesmeer because it is a small town. The other half stated that this was not a factor when planning their trip to Chrissiesmeer. When asked how often respondents travelled to small towns for a holiday or a Sho't Left holiday, six of the respondents stated that they took these trips two to three times a year. Three others selected that they took a short trip at least once a year. Of the remaining three respondents, Respondent A chose "not often", while Respondent H mentioned that they only took a small-town trip once every few years. Conversely, Respondent L mentioned that they made a trip to a small town at least four or more times per year.

5.3.2.2. Events-Based Tourism

When asked if respondents had ever planned a trip around a festival, music concert or an event, 10 respondents claimed they previously had done so. Only two of the respondents had not previously planned a trip around an event before and had not travelled to a tourist destination to attend an event. Four of the respondents had travelled for an event once every few years. Three respondents mentioned that they travelled to attend a festival, concert, or event once a year, while the remaining three respondents planned and executed trips around an event two to three times a year.

Some respondents travelled to Chrissiesmeer to attend an event when planning their trip to the small town. Seven of the respondents did not travel to Chrissiesmeer for any event, while the remaining five respondents travelled to the Highveld for a variety of different events. Respondent J travelled to Chrissiesmeer to attend a "Land Rover festival". Likewise, Respondent C listed "visit family" as the event they attended in Chrissiesmeer. Not much information was given by both respondents. Respondent D listed the bird-watching season as the event they attended in Chrissiesmeer, while Respondent A attended the Frog Night Festival during their short summer weekend trip in 2015. Finally, Respondent K visited the area for various events, which included the bird-watching season and the wildflower season. As a part of the bird-watching season activities, this respondent participated in the Crane Festival. In addition, they attended a Fun-Run/marathon event and the Lake Chrissie Craft Liquor Fest.

5.3.2.3. Nature and Phenology-Based Tourism in Chrissiesmeer

Apart from the reasons tourists visited Chrissiesmeer detailed in Figure 9, most of the mentions of nature and nature-based tourism came through one particular section of the questionnaire. This was the section respondents were asked to share what they believed was the most memorable feature of Chrissiesmeer. Five of the questionnaire respondents mentioned lakes in their answers. These respondents simply mentioned "the lake views"; "the lake"; and "the beauty of the lake". Another respondent wrote about the "Lake District [with] (over 200 lakes)" and the "geology for the lake district last erosional remnant-platform of Olifants, Crocodile and Orange [R]iver". Respondent J, who had travelled to Chrissiesmeer on

several occasions, mentioned that they took interest in the “surrounding lakes which in past years have decreased in size but lately have filled up”.

Other mentions included “the natural environment”, “the scenery” and the “wildlife”. One respondent, Respondent B, wrote that “the grass lands” were the most memorable feature of Chrissiesmeer. Two respondents mentioned animal species and animal-related tourist activities in their respective answers. Respondent D solely mentioned “flamingos” in their answer, while Respondent A mentioned “frogging” as their most memorable feature of Chrissiesmeer.

5.3.3. Climate Change and Environmental Observations and Perceptions

In this questionnaire segment, respondents were given a set of statements to react to and questions to answer based on their experience of the environment and the climate in Chrissiesmeer and secondly, their perceptions of climate change and the potential effects it could have on the Chrissiesmeer tourism sector.

Initially, respondents were asked about their travel practices and trip preparation, specifically regarding carbon emissions when travelling. When asked to respond to the following statement: “I take my potential carbon emissions into consideration when planning a trip”, the respondents were asked to either agree or disagree on a Likert five-point scale with the statement. The five options included “strongly agree”, “agree”, “neutral”, “disagree” and “strongly disagree”. Of the respondents, six respondents stated that they were neutral about this position on considering their potential carbon emissions when preparing or planning for

a trip. Three of the respondents agreed with the statement above, with Respondent C strongly agreeing with the statement. Respondent D and Respondent L claimed that they did not consider their potential carbon emissions when planning or preparing for a trip ahead. The respondents were then asked to consider how important it was to consider one's carbon footprint when travelling. The following statements were given a Likert five-point scale to allow respondents to choose the answer that was most applicable to their experience and thoughts. The five options included "very important", "important", "less important", "not important at all" and "not considered". Six respondents chose that it was important to consider one's potential carbon footprint when on a trip, while Respondents E, G and L believe that it is less important to do so. Respondents C and I believe that it is "very important" to pay attention to potential carbon emissions, which was completely refuted by respondent D who believes that it is "not important at all".

Each respondent was asked to list any potential reasons they would likely cancel a holiday or a trip and we were given a variety of different options. These options include the occurrence of an extreme weather event (such as floods, potential storms, or veld fires), a disease outbreak (i.e., COVID-19), any weather disparities (incredibly high or low temperatures or extreme weather conditions), any safety hazards or political unrest, failing infrastructure and finally, high travel costs. Respondents were also allowed to mention any other potential reasons behind their trip cancellation. Respondents C, E and K chose all of the options provided. Respondent F answered selected all the options provided, however, excluded weather disparities in their answer. Respondents B and I would cancel a trip if the area was experiencing any extreme weather events, a disease outbreak, political unrest or safety hazards or high travel costs. These respondents would be comfortable with travelling to areas

with weather disparities and failing infrastructure. Respondent J chose that they would not travel to areas experiencing a disease outbreak, any safety hazard or political unrest, areas with failing infrastructure and when the travel costs are particularly high. Therefore, they would not necessarily be concerned with cancelling their trip should any extreme weather events happen or travelling to an area with weather disparities. Three respondents only chose two options. While the final two respondents simply chose one each. Respondents D chose high travel costs, while Respondent L claimed that any safety hazards or political unrest, such as the risk of terrorism or crime, would prompt them to cancel a trip to a particular area. Of the remaining three, Respondent B listed extreme weather events and disease outbreaks as their potential reasons to cancel a trip. Respondent H chose a disease outbreak and any safety hazards and political unrest. And lastly, Respondent G listed safety hazards, such as political unrest, and high travel costs as they are determining factors to cancel a trip. Overall, the highest chosen reason for respondents to potentially cancel a holiday or a trip was ‘safety hazards and political unrest’ (10) which was followed by ‘a disease outbreak’ and ‘high travel costs’ '(both 9) and thirdly, the ‘experience of extreme weather events’ (7).

Conversely, respondents were asked to list any reasons they would lengthen their trip and were also allowed to add any additional options to prove alternative reasons. The most popular option to potentially lengthen a trip or holiday was to ‘explore a destination’. Eight of the respondents chose that they would extend their trip to have enough time for the variety of tourist activities and amenities available in the area, which was followed by the option of visiting friends and family. Of the nine who chose to continue exploring a destination, four respondents would opt to lengthen a trip or holiday to explore a destination after a festival or event they had attended in the area. Four respondents, likewise, would

extend their trip if it would allow them to engage with the community more than they did during the time they had initially planned to spend in the area. Two respondents hoped that they would be able to extend their trip for volunteer work on a community program or an eco-project or opportunities. Lastly, Respondent G added another reason they would lengthen their trip in a particular area is “if [they] became trapped there”. With a final option, three people opted to stay on their trip or at their destination for ‘good weather’.

The following section examines the environmental and climatic experiences of the former tourists of Chrissiesmeer. Respondents were asked to comment on the littering and waste disposal issues present in Chrissiesmeer. Four respondents stated that there was no noticeable littering and waste management issue around the small town at the time of their visit. Respondent H felt there was a significant littering issue around the area, which was co-signed by Respondents B, G, and I. However, Respondents A and C disagree and claim that they did not notice any issues with littering or waste disposal in the area. Respondents D and K, furthermore, agree that they did not see much of an issue with littering or waste disposal in the area at the time of their trip. In conclusion, 50% of the respondents claim that they experienced littering or waste removal short fallings, while the other half did not.

The following questions were set for Chrissiesmeer tourists, who had revisited Chrissiesmeer on several occasions over the years. The purpose was to gauge the history of Chrissiesmeer’s climate from the perspective of these returning tourists. The first statement asked if the tourists had experienced any changes in the temperature when has had visited the area during the same time throughout the years. Seven of the respondents were first-time visitors to the area and thus, were not applicable. Of the remaining respondents, Respondents C, D and L stated that they had not experienced any temperature changes when they had returned

to the area throughout their history. Respondents K and B both claim to have experienced a "slight decrease in temperatures" throughout the years.

The returning visitors were asked to likewise comment on the plant and flower population in the area over the years. In this regard, an additional respondent opted to choose the "not applicable" option, bringing the total to eight respondents. Of the remaining respondents, Respondents C and D stated they did not experience any changes in the plant and flower populations over the years they visited Chrissiesmeer. Respondent B states that they experienced a "slight decrease in plant population density", while conversely, Respondent K believes they experienced a "slight increase in plant population density". When asked the same about the animal population in the area, the original seven respondents remained null in void. The remaining five respondents were comprised of Respondents C and D who did not experience any changes in the animal population density in the areas. Respondents B and J claim to have experienced a "slight decrease in animal population density", with Respondent K claiming to have noticed an "apparent decrease in animal population density".

5.3.3.1. Climate Change Perceptions

Under this section, respondents were asked to consider what they believed the driving forces behind climate change were. Of the respondents, Respondent C claimed that they had not considered this. Half of the respondents, Respondents A, B, D, F, I and K, believe that they believed the driving force behind climate change is human activity. Similarly, Respondents E, G and H would agree that human activity is a key driver behind climate change. However,

these respondents believe that this is a natural process of the earth but believe human activity spearheading climate change more significantly than the natural processes of the earth.

Respondent L believes that the driving force behind climate change is both a natural process and the contribution of human activity, however, believes that this is spearheaded by the natural processes of the earth. Lastly, Respondent K believes that climate change is equally attributed to natural processes and human activity.

Respondents were asked when they believe the effects of climate change will present themselves. Respondents were given the options to choose if the effects were already apparent, would present themselves 5 to 30 years in the future, farther in the future (50 to 100 years) or if they believed that they would be no effects at all. Of the respondents, 10 of the 12 respondents chose that the effects of climate change were already apparent. The remaining respondents, Respondents K and L, claim that they believe the effects of climate change would present themselves in 5 to 30 years from the present.

The following question looked to gauge the respondents' thoughts on whether they believed that climate change would affect the Chrissiesmeer tourism sector in the future. Seven respondents "strongly" believe that climate change will affect tourism in Chrissiesmeer in the near future. Three others slightly agreed with the above statement. The remaining two respondents answered differently from the majority. Respondent L disagrees that climate change will affect tourism at Chrissiesmeer and finally, Respondent F stated that they are not sure about whether climate change will affect tourism at Chrissiesmeer.

The majority of the respondents considered the efforts it would take to potentially combat climate change. When asked if the respondents believed tourists could potentially play a role

in combating and mitigating climate change, only two respondents, Respondents A and L, stated they did not know what tourists would be able to contribute to the solution. Five of the ten respondents “agree” that tourists could play a role, with the remaining “strongly agree[ing]” with the statement. Four respondents believe education and the spread of knowledge on climate change would be the best tool for combating climate change on a large scale. Three respondents selected widespread effort at the individual level, political will, and aptness as their choice, with Respondent F believing community engagement is the best way forward. Respondent A wrote that the foundation is based on “both political and corporate responsibility” as they believe that “the rest could fall into place if those two sectors got it right first”. Respondent L stated that they believe “going green is currently political, and rather expensive”.

5.3.3.2. COVID-19 Effect on Tourist Patterns

COVID-19 affected the travel plans of five of the respondents, who had to cancel a pre-planned trip due to restrictive lockdown regulations. The remaining respondents were unaffected. When asked about their confidence to travel during the pandemic, five respondents noted that COVID-19 had either “slightly” or “strongly decreased” their confidence to travel during a Level 1 lockdown period. Five other respondents were “neutral” about the prospect of travelling during this time, while two stated that travelling during a Level 1 lockdown period increased their confidence. This is further explored when asked if respondents would travel during a Level 1 lockdown period. Two-thirds of the respondents agreed that they would be comfortable travelling to Chrissiesmeer when lockdown

restrictions were softened. One respondent was neutral about the opportunity to travel to Chrissiesmeer during this period. The remaining three respondents stated that they would not travel, even if lockdown regulations were softened. One of these respondents acutely disagreed with the statement.

Each of the respondents was asked to describe what tourist activities and amenities they would return to Chrissiesmeer for in the following question. Respondents chose uniquely. Respondent A agreed that they would be travelling during Level 1 lockdown and that if they were to travel to Chrissiesmeer again, they would "visit for the lake, the festivals and historical tourism". Respondent B, who previously visited Chrissiesmeer only for business, shared that they would visit Chrissiesmeer for viewing and touring the lakes and felt comfortable doing so under Level 1 lockdown restrictions. Respondent F stated that they would return for the wildflower season and tours.

5.4. Chrissiesmeer Online Reviews Record

Online tourist reviews for Chrissiesmeer were sourced from TripAdvisor, Booking.com, and SafariNow. There was a total of 279 reviews and each of the 279 reviews was coded. The coding process was conducted between August 2020 and April 2021. Of the recorded reviews, 181 (64.88%) were written by tourists from South Africa, one review was written by a tourist from the African continent and 58 (20.79%) were written by other international tourists. Of all the reviews, 38 reviewers did not state their place of residence, and one location was disregarded as it was not a valid location. The reviewer listed the location as "jnb".

Of the 59 reviews of reviewers that originated from countries outside of South Africa; 1.7% of reviewers stated their country of origin as Zimbabwe. There were no other reviews written by tourists travelling from any other countries in the African Continent. In the international sample, 46 (77.97%) of reviewers were from Europe, with the majority of these reviewers travelling from Germany (32.61%) and the Netherlands (19.57%). Other reviewers came from the United Kingdom (10.87%); Switzerland (8.7%); Belgium (8.7%); Italy (4.35); Portugal (4.35); France (4.35) and Austria (2.17%). 6.78% of all reviewers were from Australia and five other reviewers travelled from countries across Asia and the Middle East, namely Malaysia (2); Hong Kong (1); Myanmar (1), and the United Arab Emirates (1). The majority of international reviewers were recorded on Booking.com and TripAdvisor. SafariNow did not provide any international reviews. Of the 181 South African-based reviewers, 99 (54.7%) solely listed 'South Africa' as their place of residence. Of the remaining 82 reviews, 39 (47.56%) reviewers came from the province of Gauteng. This was followed by KwaZulu-Natal (15) (38.46%); Mpumalanga (14) (35.9%); the Western Cape (8) (20.51%), and Limpopo (3) (7.69%). The Northern Cape, Free State and the Eastern Cape all produced one recorded tourist travelling from each province, while no tourists were recorded to have travelled to Chrissiesmeer from the North West Province.

As Chrissiesmeer is a small town with a small number of establishments, there WAS a limited number of reviews. A large number of establishments, particularly private guest farms (accommodation), do not have pages on TripAdvisor, Booking.com, and SafariNow and none were likewise created by former tourists. Thus, this review analysis included every review written on all listed establishments in Chrissiesmeer.

TripAdvisor produced 50.54% of the recorded reviews, while Booking.com followed with 85 reviews (30.47%) recorded and SafariNow with the remaining amount (19%). TripAdvisor had the largest range of reviews posted. Reviews posted between 2010 and 2015 accounted for 8.51% of TripAdvisor reviews recorded. There appeared to be a spike in 2016, where reviews moved from none in 2015 to 23 reviews in 2016. The number of reviews increased double-fold in 2017 accounting for 28.37% of TripAdvisor reviews, which was the year Chrissiesmeer received the most reviews. The following year (2018) accounted for 21.28% of the total amount of reviews (30 reviews) and reviews decreased to 19 reviews in 2019. Following this, 2020 only received six reviews and there were no reviews recorded in 2021.

Booking.com and SafariNow follow similar trends. SafariNow had no reviews before 2013 and the first review posted for any establishment in Chrissiesmeer posted on Booking.com was in 2018. Reviews on Booking.com peaked in 2019 accounting for 45.88% of the recorded Booking.com reviews. This was followed by 34.12% of total reviews that were posted in 2020. SafariNow saw a more gradual inclination. Review posting grew from 1.89% in 2013 to 16.98% in 2015. However, the trend plateaued from 2015 through to 2018, which recorded 16.98% of all SafariNow reviews that year. Reviews declined from 13.21% in 2019 to 9.43% in 2020. Reviews written and posted in 2021 make up only 1.79% of the total reviews captured and of this, 80% of those reviews were posted on Booking.com with the remaining reviews being posted on SafariNow.

Of the total amount of reviews captured, 92.83% of reviews were written in English and 20 reviews were either written in Afrikaans (three) or other international languages (17). The 17 reviews posted by international tourists were posted on TripAdvisor (three) and Booking.com (14). Both of these platforms have an internal translation function, whereas SafariNow does

not. These three reviews from SafariNow were left untranslated and were not analysed any further. The remaining 17 reviews were internally translated, captured as the English translation, and analysed with 92.83% of English results.

5.4.1. Mentions of the Natural Environment and Biodiversity

Of the 279 online reviews, 38.35% (107) of Chrissiesmeer reviewers noted nature and natural features in their reviews. The review nature categories span various nature-based features and species and were coded according to the words mentioned in the review or the images attached to the review. These included mentions of natural environments (the 'scenery', 'landscape', 'environment'); environmental features (specifically regarding the 'lake' or 'pans'); natural settings ('gardens', 'farms' or 'yards'); any mention of plant or animal species (including all plants, domesticated, farm or wild animals) and lastly, any nature-based activity (e.g. 'nature walks', 'bird-watching'). This included all mentions of Chrissiesmeer as the 'Lake District' area and mentions of 'Lake Chrissie'. Regarding the text, these quotes were both taken from both the title and the full text of the review. Some additional quotes were lifted respectively from any responses written by owners and administrators of the establishment in question.

Apart from the words and phrases that were written by reviewers, all reviews which included images were coded as such ('pictures') without any mention of the particular features presented in the images, to avoid misinterpretation. The majority of these mentions were written and posted on TripAdvisor and Booking.com, including images of any water bodies.

This is due to the number of reviews sourced from these pages surpassing the number of reviews on SafariNow and the inability to add imagery on SafariNow reviews.

All reviews that mentioned nature, a natural setting, or a natural feature, including any plant and animal species, were flagged and recorded for analysis. These were coded according to the content of the review and categorised under a list of the nature-based features mentioned above.

Of the 107 Chrissiesmeer reviews noting nature and natural features, 61.68% of reviews were written by reviewers located in South Africa. 19.62% of reviews were written by reviewers that did not specify a location on their profile, while 18.69% were internationally based travellers. Of those international travellers, 65% were written by travellers based in Europe, followed by reviewers based in North America (15%) and Asia and Australasia respectively (both 10%).

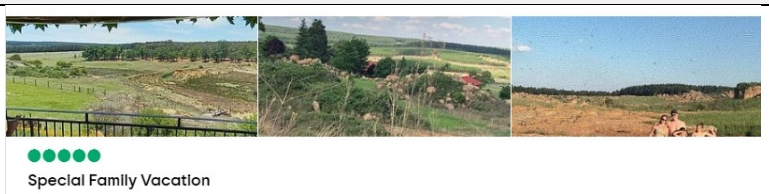
On the nature-based reviews, 15 reviews included images uploaded by reviewers where the subject matter is the outdoors, which included natural features or any plant or animal species. These reviews were coded as image-based reviews. As SafariNow does not have any reviews with attached images, the majority of the reviews that included images were collected from TripAdvisor and Booking.com, with TripAdvisor accounting for 93% of those reviews. A large majority of images that were uploaded by reviewers were of the outdoors as opposed to the number of images of the indoors.

For a general description, most images are of wide landscape shots of outdoor areas, lakes and/or pans, different plant and animal species, and garden areas. These images are given more context by the text portion of the review set to be further analysed below. Some

examples of said reviews can be seen in Table 3, displaying reviews of three of the more popular establishments in this category. In one review attached to images about the Springgrove Estate, referred to as a "secluded farm", a reviewer describes the setting as a "retreat" and a "home away from home". Another described the estate as a "peaceful….piece of heaven". A reviewer who posted an image of a water body with ducks on the waterline described "the view over Chrissiesmeer [as] panoramic".

There was an interest in picturing water bodies to express admiration for the lakes and pans around the Chrissiesmeer region. With a set of images, one reviewer described the "gardens and view of the lake" as "beautiful".

Table 3 Reviews with attached imagery.

Establishment	Date Visited	Post Imagery
Springgrove Estate	November 2020	 ●●●●● Special Family Vacation
Florence Guest Farm	August 2018	 ●●●●● A lovely stopover
Springgrove Estate	April 2017	 ●●●●● Easter stopover from Kruger
Miss Chrissie's Country House	March 2016	 ●●●●○ Fabulous country visit
Florence Guest Farm	December 2019	Reviewed: 21 December 2019 Awesome Paradise 10 

Reviewers who mentioned the lakes and pans appear to have taken a liking to this key feature of the area. There were 36 mentions of lakes and an additional three mentions of pans, accounting for 33.64% of nature-specific reviews and 12.90% of total Chrissiesmeer reviews. Most of the reviews were written from June through to November, with November recording the highest number of visits throughout the years (19.44%).

Only four reviews particularly mentioned the ‘Lake District’ in their reviews of Chrissiesmeer. One reviewer mentioned how Chrissiesmeer “is in the centre of South [Africa’s] largest Lake District with pans and lakes in the wetlands”. Two mentions were specifically about a guest wedding farm, which one reviewer described as “ideally situated along a rural highway outside a small town in the Lakes district…”, with another complimenting how the farm is “beautifully located in the middle of the lake area”. One tourist stated that the Chrissiesmeer “area is in the centre of South [Africa’s] largest Lake District with pans and lakes in the wetlands”. Two reviewers that did not particularly mention the “Lake district” by name, simply stated that the establishments they visited were “surrounded by many little lakes” and “surrounded by meadows and lakes,” describing it as “absolute tranquillity”.

There were six direct mentions of Lake Chrissie and two additional reviews that related to Lake Chrissie without direct use of its name. Four of the reviews that were written about Lake Chrissie were from reviews written about Miss Chrissie’s Country House. Two reviewers both recorded how each room at the guesthouse overlooked “out onto the farm and Lake Chrissie”. This setting was described as “beautiful” by one reviewer and “very peaceful” by the other. Another reviewer concurs, noting how the “little town of Chrissiesmeer” enjoys a “great view over Lake Chrissie”. Two reviews simply mentioned the name ‘Lake Chrissie’ in their review title, while the other reviewer mentioned how visiting the lake was a specific portion of their trip itinerary. The last two reviews similarly wrote about how “lovely looking on Chrissiesmeer lake” was “the whole time” and of the “amazing view of the Chrissiesmeer lake”.

‘Dams’ was another term used in reviews quite frequently. The term ‘dam’ was used 16 times in 15 reviews and, in each review, the term lake or pan was not used. No other term was used

to describe any other water features in these reviews. These dam-related reviews account for 14.02% of all nature-related reviews. This brings the total of any mentions of water bodies to 47.66% of all nature-related reviews in Chrissiesmeer and 18.28% of all Chrissiesmeer reviews recorded. In this regard, the themes follow a similar pattern as the reviews for lakes and pans. Reviewers refer to their dam-side settings as “beautiful” and a place of “peace and quiet” on multiple occasions. Similar sentiments of the “view”, “over-looking” or “looking out over the dam” were shared by this group of reviewers. They described these moments as “stunning”, “wonderful” and “beautiful”.

Of all the establishments, Miss Chrissie Country House received most of the mentions of lakes accounting for 41.67% of all lakes and pans reviews. Most reviewers commented on the view of a lake or pan from either their room, a farm, or a garden area.

Tourists that wrote about the lake access from this establishment describe it as a “beautiful location on the lake”. Florence Guest Farm followed accounting for 38.24% of lake-related reviews and most reviews commented about the luxury of having access to “your own lake”, among other things. Tourists wrote about how the “setting was just incredible looking out onto the lake” providing “lovely panoramic views of several lakes in the area”. Miss Chrissie’s was particularly commended for its “lakefront access” and one reviewer mentioned how the “fantastic views of the surrounding lakes make [Miss Chrissie’s Country House] a winner”. Springgrove Estate was described as a “misty lakeside wonderland” and garnered some mentions about the establishment’s access to rivers and lakes, albeit only accounting for 11 water body-related reviews.

The phrase “view of the lake” was used by three reviewers commenting on their respective establishments, describing it as “beautiful” and “stunning”. One reviewer described the “stunning setting” while “overlooking the lake”, while another mentioned how “beautiful” the “surrounds” were because of the “view of the farm and Lake Chrissie in [the] background”.

Apart from the view, a few reviewers were pleased with the lakes and pans because of the activities they were able to do when on their holiday. One reviewer was pleased that their daughter was able to “have a dip in [a] lake”. A reviewer writing about water-based activities shared similar sentiments, stating how Springgrove Estate had a “nice river with small rapids for the kids not too far away”. As previously mentioned, one reviewer wrote about how their group had planned a “fun day” at Lake Chrissie as a part of their itinerary, another reviewer enjoyed a “nice walk…by the lake”. More reviewers spoke about the types of tourist activities that were related to the lake. This theme will be discussed in further detail later in this section. Of the remaining themes in reviews, the last group of nature-related reviews were of travel suggestions. One reviewer from The Netherlands wrote that one should “go to the lake in Gennesaret” when in Chrissiesmeer, while another tourist made a “recommendation” for others to “take [a] mosquito net (because of the lake)”.

From the comments made on nature and the natural appeal of establishments in Chrissiesmeer, there was a small range of words that were used to identify these environments. The property types of the natural environments of each establishment were identified as farms, gardens, and forests. These were the most mentioned natural environments/property types mentioned in nature-related reviews. Other terms used include

plantation, grounds, and estate, which were less frequently used. The general terms used to describe the natural environment at large include the use of “scenery”, “surrounds/surroundings”, ”landscape”, “nature”, “setting”, the “country” and the “environment” at large. One reviewer particularly referred to the natural environment as “Mother Nature”. This tourist wrote of how they feel the “surrounding environment and birdlife connects one to the Beauty of Mother Nature!” Through the use of these terms, reviewers connected their experience of and connection to nature and natural environments in Chrissiesmeer, which will be examined further in this section.

The term “setting”, albeit vague and non-specific, was recorded under this category, as in the imagery reviews coding, the term was contextualised by the use of other features and elements of the natural environment. For example, one reviewer wrote that the establishment they had visited was “in a stunning setting overlooking the lake” which was co-signed by another who wrote: “The setting was just incredible looking out onto the lake”. Another reviewer wrote about the “beautiful setting on a dam” while they “listen[ed] to the frogs under the Milky Way”. The reviewer mentioned that this was an experience they “needed away from the city to recharge”. A few descriptions of the different “settings” former tourists experienced in Chrissiesmeer were described as “stunning” when related to a “setting with an abundance of birdlife” or “beautiful” because the “environment is quiet, peaceful and tranquil” and lastly, about “the perfect setting on a farm”.

Discussing the “scenery” was one of the more prevalent themes that emerged through the coding process, as reviews about the view spanned across all categories or this section. “From the picturesque scenery,” reviewers wrote about how “scenic environments” were the “most relaxing… and [were] a great time to bond with the family” or the “perfect place to unwind”.

“The fresh air and gorgeous scenery made for a fantastic break away”. Reviewers went on to write about how it was “a real privilege to be in the environment” while “enjoy[ing] the beautiful landscape” of Chrissiesmeer. One reviewer wrote that Chrissiesmeer is a good option to visit “if you want to be close to nature”, while another reviewer went on to say that “you really feel one with nature here”. Two reviewers award these experiences to the expansiveness of these natural environments, mentioning how the “spacious grounds with ponds” and “lots of space and lots of nature” added value to their travel experiences.

One of the most popular property types mentioned was farms and tourists' experience of farm-based establishments in Chrissiesmeer. The term farm was used 39 times in 28 reviews of nature-based reviews, which accounts for 26.17% of the nature-related reviews. The reviews mainly discuss the respective farms' proximity to the lake, farms as a break from urban living, the overall beauty of the farm environment, the workings of the farm, farm animals, and tourist activities. Reviews referring to farm animals and farm activities will be discussed in further detail later in this section and thus this section will focus on the former categories mentioned above.

Three reviewers wrote about how the farms they visited were connected to the surrounding lakes, pans, and/or dams. This was done merely by stating how one “farm boarder[ed] on the meer/dam”, while others wrote about how the view from the “farm overlook[ing] Lake Chrissie” or inversely the view of “all the rooms [that] look out onto the farm” “add to a great” and “very peaceful experiences”. In the general reviews about farms, quite a few reviewers were just pleased with their farm experience, one even clearly stating that their experience of Florence Guest Farm was personally “one of the better farm stays [they had] stayed at in a long time”. More reviewers agreed by sharing how they similarly enjoyed their

stay at the farm “very much”, one calling it “this beautiful farm” and another reviewer mentioning how they spent “most of the[ir] time at the farm”. Others simply mentioned how the property and surroundings were pleasant in statements such as these: “The farm is stunning!”; “Had a wonderful stay at this lovely country farm”; “generally around the farm... It's beautiful on the eye” and “the guest farm is very pretty, the surroundings magnificent”. The final group of reviews were of tourists who enjoyed the “atmosphere” of the farms they visited. In the “Liked” section of their Booking.com Chrissiesmeer site, one reviewer wrote “the farm atmosphere” while one TripAdvisor reviewer wrote that their travel group “enjoyed the farm atmosphere”.

Farm visitors were also predominantly interested in the experience of working farms. There were five mentions of the workings of farms, apart from mentions of livestock and other farm animals. The term “working farm” was used three times in two reviews, with one reviewer stating how Miss Chrissie’s Country House is a “lovely guest house on a working farm” while another reviewer that had visited a few years earlier wrote the following: “Situated on a working farm with cows and sheep-what a pleasant surprise and enjoyable stay it turned out to be”. A step further, one reviewer similarly wrote about the workings of the farm but mentioned in particular how consuming fresh goods produced on the farm added to their farm stay experience at Miss Chrissie’s Country House. They wrote that they enjoyed the “delicious creamy milk from the farm”. In essence, establishments such as Miss Chrissie’s Country House and Florence Guest Farm provided tourists with “a real farm experience”. These establishments gave former visitors a “very peaceful and relaxing…place you can really switch off from the rat race” of urban living.

Mentions of the "country" were likewise among the keywords used when describing the natural environment and scenery in Chrissiesmeer. One reviewer spoke about the "stunning countryside…surrounded by plantations of blue-gum and pine trees for as far as the eye can see". Other reviews spoke about taking relaxing nature walks around the "lovely grounds" that were "very peaceful" because of the "awesome views of surrounding countryside". Lastly, one reviewer wrote about "enjoy[ing] a very lovely country surroundings".

Furthermore, gardens were among the environmental settings which were mentioned on a few occasions. A reviewer that had visited Miss Chrissie's Country House took note of their "tranquil gardens" and two others stated that Miss Chrissie's had a "beautiful garden setting". However, one former visitor wrote a review that gave some constructive criticism for the establishment by writing: "comfortable outside chairs would have been nice, as you spend a lot outdoors: garden/swimming pool". Among the other gardens mentioned was Florence Guest House where one reviewer mentioned how "the room, gardens, and view of the lake/pan [were] just stunning". No other establishments were recorded to have been connected to any garden-related reviews.

One of the most mentioned natural environments was forests. Forests were mentioned in five reviews in a variety of ways. Tourists appeared to be intrigued by the "vastness" of forests. For example, Springgrove Estate is described as "tucked away between a pine forest", which adds to the "tranquillity and peace" of the environment. Florence Guest Farm has a "boskerk" (chapel in the bush) "between the pine trees" forest. This is described as "exquisite". Former visitors also enjoyed the activities they were able to partake in because of the forests. The primary goal is "exploring forests" through a variety of different activities or to see tourist attractions, such as the "bushman paintings" (La Rochelle rock paintings) one

reviewer says one finds by “walking trails throughout the forest”. Much like the other natural environments, the view of forested areas was a feature for former tourists, just as one reviewer mentioned in their review about the pine forest at the Springgrove Estate.

As mentioned above, “farms” were one of the most popular natural environments mentioned in the area. Other reviews mentioning farms include Miss Chrissie’s Country House with “all the rooms look[ing] out onto the farm and Lake Chrissie” and the “Openness of [Florence Guest House’s] surrounds are priceless [as] the quietness on the farm feeds the soul”. The main activity tourists participated in, in these environments, were nature walks. These environments are popular for being “good walking areas” with great “opportunity for nice walks in the oak forest and by the lake” or pan. Springgrove Estate received the most mentions regarding nature walks, with some reviewers describing the venue’s “endless trails to walk [in] total comfort with amazing views and wildlife”; how it is “the perfect setting on a farm with…beautiful views, space to breath, walk, watch birds and be” and the fruitful venue for “avid walkers [who] could walk to [their] heart's content in every direction which [this reviewer describes as] so special”. Another review wrote of how they “had a great time with friends - cycling, walking, and exploring forests”. Mentions of hiking and cycling were likewise frequently recorded throughout.

“Forests” were among the most mentioned natural environments. Of the “secluded forests” mentioned in reviews, most were Oak and Pine forests (with one mention of “blue-gum” trees) located on the premises of Miss Chrissie Country House, Springgrove Estate and Florence Guest Farm. Forests were seen as an “escape [from] the city life and retreat[s]” because of the “freedom of space and peace wildlife". They similarly made for special wedding moments as one “have [their] ceremony in the forest”.

In December 2017, a reviewer wrote about how the “birdlife [was] thriving [in the area] and long walks [were] a must around the dams”, encouraging keen tourists to “take [their] binoculars and walking shoes” along when visiting the area. Another wrote about how the Chrissiesmeer area has “so much on offer with walks to see veld flowers, birds and frogs at certain times of the year and much more” in September of the same year. Regarding the flower species mentioned, “wildflowers” were mainly connected to nature-based activities and specifically, to the annual Wildflower Day event. One reviewer mentioned how “the Chrissiesmeer area is famous for its…wildflower life in the summer” (December 2015). This reviewer went on to write that they intend to “plan around [the “annual Crane Festival, Frog Night and Wildflower Day”] for [their] next visit” to Chrissiesmeer.

The same aforementioned reviewer also spoke about the “prolific” birdlife and “profuse frog…life” in the area. The animal species that were among the more popular mentioned include the birdlife and frog population. On farms and estates, this was mainly “farm animals” and livestock. Lastly, as Chrissiesmeer is known to be a great fishing area, there were some mentions of fish species, such as bass, with one reviewer writing: “the lake has a lot of Black Bass which is great fun to catch” and another when writing about Springgrove Estate mentioned that the venue had “a bass-filled dam”. Some reviews travelled specifically to Chrissiesmeer for their fishing activities, with one reviewer entitling their review “tranquil fishing weekend” in November 2017.

Of the birdlife, the crane species were mainly mentioned concerning birding activities and the annual Crane Festival. The same can be said about frogs and the Frog-Night festival, including walks in nature. No particular frog species were mentioned in any reviews. However, reviewers recall memories of “listening to the frogs underneath the Milky Way, just what

[they] needed away from the city to recharge for the week" or "searching for frogs" at the Frog-Night festival, during the December of 2014.

Of the farm animals mentioned, "sheep, cattle, and horses" were the main animals mentioned in reviews connected to farming environments and farm experiences. Some reviewers recall "cuddl[ing] dairy calves and do[ing] so in absolute comfort", milking cows, bottle-feeding [a] newborn calf" or "witness[ing] a calf being born - a rare experience for city people". Interactions with farm animals was notable throughout mentions, which was emphasised by animal sightings. Reviewers would write about being in close to sheep, cattle, and horses; about how "the horses were directly in front of our Cottage eating grass", or their accommodation "nearby sheep, cattle and horses". Nonetheless, reviewers at Florence Guest Farm recall memories of "watch[ing] the horses running past…while getting ready, [which they found] Just breathtaking!!"

The last nature-based activity mentioned, albeit briefly, was camping. One reviewer complimented Springgrove Estate as an ideal location to go camping "for those that would like to camp under the stars". This reviewer stated that campers could "rest assured that the farms [were] well secured in the evening and…patrolled for additional safety". Another mentioned they "were quite comfortable" camping at Florence Guest Farm "for one night in the[ir] tented camp" for a wedding they attended. This option afforded them the amenities of shelter accommodation with the camping experience. This went a long way as this review specifically mentioned that "although [they are] not the camping type, [they] were quite comfortable" in their tented accommodation. A reviewer wrote that "Miss Chrissie's is the perfect stop to set up camp when birding in Chrissiesmeer" while another mentioned that this "camping site [was] not suitable for winter!!"

5.4.2. Mentions of Weathers or Seasonality

Out of the total reviews written for Chrissiesmeer on the three online review sites, there were only 13 mentions of weather and seasonality, accounting for only 4.66% of all Chrissiesmeer reviews.

The three types of weather conditions that were mentioned in these reviews were rainy conditions, cold weather, and sunny conditions. The months that received the most reviews were June, May, and April, accounting for 53.84% of all the weather and seasonality reviews. No reviews were written for trips taken in January, February, and November. Most of the weather-related reviews were written in 2017 (5), with the earliest year a weather review was written in 2015 (2). Each year through to 2020 receive two reviews each, with 2018 only receiving one.

Cold weather and winter made up a majority of the reviews written. Most of these reviews were written by tourists that stayed at Miss Chrissie's Country House. These reviews were directly linked to each reviewer's experience of the accommodation services.

A reviewer that stayed one night at the establishment in June of 2016 commented on the upkeep of the room and the facilities and amenities offered. They were particularly fond of the fireplace and electric blanket. The reviewer stated that these "came in very handy for the freezing night" they had experienced. They said this made for a "lovely experience". Another reviewer entitled their review "Friendly and warm" referring to the service they received throughout their stay and the fireplace in their room that provided warmth. They were also provided with wood which allowed them to "[keep] the fire going through the night [as] (it was a cold winter's evening)". This reviewer visited Miss Chrissie's in June 2017. A reviewer

that visited a month after (July 2017) wrote that despite receiving a “warm welcome” from staff, the “camping site [was] not suitable for winter!!”

Springgrove Estate received similar reviews. In August of 2015, a reviewer wrote about how “surprise[d]” they were about the upkeep and the amenities of the accommodation at Springgrove, which also included a fireplace and “firewood for cold evenings”. A reviewer that visited in May 2017, mentioned that there was a “large entertainment patio for a perfect summer braai and a fireplace for the cold winter evenings”. This reviewer did not go into details about the particular weather conditions they experienced. However, they were pleased to learn that the staff had switched the “electric blankets on for [their] late arrival”, calling this “a bonus”. Another tourist that travelled to Springgrove mentioned that they experienced “fresh crisp air” and a “cloud of mist that cover[ed] the very still dam” during their trip in June 2017. This reviewer had a positive experience, referring to Springgrove as “a beautiful winter break [that] is [truly] out of this world”. In a review written by a visitor in April 2019, a representative of the establishment wrote back advising future winter tourists to visit the establishment because “the farm has a beauty and rawness of its own during this period”. The representative further stated that there may have been “Cold nights, but…[the] days” were “lovely and clear, crisp”. The two remaining reviews for Springgrove were of trips taken in April (2019) and December (2015). The former was reportedly a trip filled with “beautiful sunny days end[ed] with a log fire” that allowed for more outdoor activities to occur later into the day. After “a great couple of days of taking it easy”, this experience left the reviewer feeling “relaxed and refreshed”. The latter (December 2015), was described as a trip with “cold and rainy days indoor[s]”.

The only other mention of rainy conditions was posted on the 24th of September 2018. A traveller posted about The Billiard Room writing about the "delicious soup" they enjoyed "on a rainy afternoon". Another review written about The Billiard Room in March 2017 wrote about how the "bar and restaurant [was] really cozy in winter". Both of these reviews called this establishment a good stop-over point, and thus, these tourists did not stay in Chrissiesmeer for an extended time. The final weather review was written McCloud's Cottage (John Jack Inn) in May 2016 that spokes about the "cold night" they experienced. The review wrote of how "the woollen duvets and pillows [were] a treat" also considering how the "fire place [was] well stocked with wood which war[ed] the room quickly".

5.4.3. Mentions of Events: Festivals, Weddings, and Other Events

There were a few references to festivals and events hosted in Chrissiesmeer, by the town's tourism sector or by an establishment in the town. There was only one review that specifically mentioned three of the main annual festivals hosted in Chrissiesmeer. These include the Crane festival, the Frog Night festival, and Wildflower Day. This review was written in the December of 2015 by a reviewer who listed Mpumalanga, South Africa as their place of residence. The review was written for Springgrove Estate and the reviewer was very thorough in their review of the area and the events held at Chrissiesmeer. They described details of the Lake District area, the "prolific" and "profuse" animal species, and cited the Crane festival, Frog Night, and Wildflower Day events. The reviewer had this to say: "there is an annual Crane festival, Frog Night, and Wildflower Day which we will plan around for our next visit". Thus, it appears that the reviewer did not attend any of these events, despite their knowledge of

them. The reviewer ended off the review with a recommendation to future tourists to visit Chrissiesmeer “as it is suitable for all”.

Another mention of events was in a review posted in March 2018. There was no mention of the annual events held in Chrissiesmeer. The review did mention that they had travelled to Chrissiesmeer to attend another event in the area. The event in question was the “South African Freshwater Angling Championships”. The “Eastern Province and North West Mpumalanga Provincial Angling Teams enjoyed a very pleasant week-long stay at Springgrove Estate during the National Angling Championship”. The reviewer stated that the beautiful tranquil landscape offered an “ideal relaxing atmosphere [for] tired Anglers from a nearby Lake”. This was the last of the formal large-scale events that were mentioned in reviews.

The remaining four reviews that mentioned other events, apart from wedding events, were personal events that reviewers either hosted or attended in Chrissiesmeer. One reviewer wrote about a “Bikers weekend with friends”, which was a “lovely weekend getaway at the historic Miss Chrissie’s” for their biking society. This weekend event was hosted in February 2018. Two reviewers used their trip to Chrissiesmeer for a “Book Club Girls Weekend” and for a “workshop”, aided by Chrissiesmeer’s “central location in the area”. Lastly, the final reviewer attended a “friend’s birthday party” with their husband in February 2017. All these events required each of these reviewers to travel from as far as Dullstroom, Gauteng, and Vaalwater to be in attendance, a range of 111-419km from Chrissiesmeer (Google Maps, 2021). Two of these reviews did not have a location tag.

There were 23 mentions of weddings in total, accounting for 8.24% of all Chrissiesmeer reviews. Of these reviews, 12 were written by a guest who attended a wedding in

Chrissiesmeer, while four were written by people who got married in Chrissiesmeer. The remaining eight reviews either did not mention any additional information to clarify their travel purposes or only commented on weddings in general. The reviews were primarily written for Miss Chrissie's Country House, Springgrove Estate, and Florence Guest House.

Regarding the reviews written by guests of weddings, there were fewer mentions of the natural environment and more of an emphasis on the quality of the accommodation and the service received. Some reviews commended Miss Chrissie's Country House for their comfortable stays. They described the quarters as a "wonderful, cosy and beautiful lodge, [with] neat and clean rooms". This reviewer commended the service they received noting that the staff "went over and beyond to accommodate [them] at last minute when there was a problem with [their] arranged accommodation in Chrissiesmeer for a wedding". Another reviewer was excited to write about their culinary experience at Miss Chrissie's, detailing how the evening braai and morning breakfast were enjoyable and even referring to it as "GREAT!" They were able to use this trip as a "reunion friends weekend" while they "attend[ed] a wedding in the area". A third reviewer similarly enlisted this as a "fabulous stay" when they "stayed over for one night as a friend of [theirs] got married close by". One reviewer who attended a wedding in May 2016 did not comment much on their stay. All reviewers did not mention where the respective weddings they attended were being held.

Some of the reviews took a different approach to their wedding-related reviews. Some reviewers were less impressed by the quality of accommodation, with one reviewer mentioning that Miss Chrissie's was "overrated…and not worth the price you pay". A visitor that attended a wedding a few months earlier (December 2016) agreed, stating that they "arrived to a huge disappointment". Both reviews did not believe that Miss Chrissie's Country

House was worth the establishment's 4-Star rating. The second reviewer only spent a night in Chrissiesmeer to attend the wedding "close by". Neither of these reviewers disclosed the location of the weddings they attended.

Miss Chrissie's received another unpleasant review from a wedding guest that had booked their stay five months in advance on the 30th of December, for a wedding they attended in May. It reported that Miss Chrissie "booted [them] out" in January before the wedding in May. The review noted that this "left [them with] little choice of alternative accommodation as there [was] a wedding that weekend…and most places [were] already fully booked". This reviewer did not state where the wedding they were scheduled to attend was hosted.

Springgrove Estate received three wedding-related reviews. One was written by a reviewer that got married at the venue. Another was written by a guest and the last review was some commentary on the venue. The wedding host got married at the event in November 2016. They described it as "the best day of [their] life". The couple got married "under this magnificent tree and surrounded by nature's finest". A representative of the venue noted that the couple's "wedding in the forest was truly like a fairytale" in response to the review. Apart from the outdoor ceremony, the reviewer celebrated the staff at Springgrove for their "priceless" effort and the "smooth" proceedings.

The guest of a wedding hosted in September 2018 travelled to the Chrissiesmeer area for a friend's wedding, which they thought was "amazing". This reviewer also paid homage to the natural environment by commenting on the views, saying that they were "absolutely breathtaking". The final review was written by a visitor travelling with their partner. The purpose of their trip is unclear as the review is short. It appears that the reviewer enjoyed the

estate (“beautiful place”) as a “great [place] to relax and unwind”. However, the review ended the text by saying that Springgrove would “make a stunning rustic wedding venue”. This review was written for a trip taken in June.

Springgrove Estate received two more general mentions of weddings. One reviewer on a trip taken in October 2019 described the venue as a “wonderful venue, peaceful, stylish and clean”. This reviewer suggested that future tourists consider this a venue for “breakouts, weddings, team building and getting in touch with yourself again”. The other reviewer visited the venue during the same time. This reviewer did not leave a comment about weddings. However, a response received from the venue’s online respondent stated that Springgrove “is not that far from Chrissiesmeer if attending a wedding over there!”

Three wedding hosts posted reviews for Florence Guest Farm. The earliest post was written in October of 2015. The host entitled the review “beautiful and unique venue” and stated that they “were lucky enough to have [their] wedding at Florence”. This wedding was a four-day event. The couple hosted their ceremony in the forest “between the pine trees” and the reviewer had plenty to say about the beauty of the built- and natural environment, the service, the food, and the amenities available at the venue. All these elements contributed to making the couple’s “special day perfect”. They recommend Florence Guest Farm to those “looking for a place to stay” and called the venue “a little gem”. Another host described the wedding venue as a “stunning wedding venue” and mentioned that they had gotten married at Florence Guest Farm in August 2007. This reviewer listed Abu Dhabi, the United Arab Emirates as their place of residence at the time this review was coded. This reviewer did not go into great detail about the occurrences of their wedding day, however, they noted that “it was just perfect”. The last reviewer that posted about hosting a wedding visited the venue in

September 2015. The reviewer entitled their post “excellent venue” and admired the wedding venue for its “great location and…excellent facilities”. This reviewer did not host a wedding at the time of the visit. This was a trip designed to organise a wedding at Florence Guest Farm. The reviewer stated that were planning a wedding for the following year. Any response from the venue, a respondent wrote that they were “looking forward to [their] wedding”. This reviewer listed their place of residence as Polokwane, South Africa.

Five reviews were written by former wedding guests who reviewed Florence Guest Farm. Four of the weddings were hosted from November to May and there was only one wedding hosted in July. Of these weddings, one guest stayed at the venue only to attend a wedding held in Eswatini, formerly Swaziland. The reviewer wrote that “if they were a young girl – [they] would definitely start saving to have [their] wedding at this awesome awesome place!” The reviewer also wrote that they had compared “everything at their wedding with [the] Florence standard” and noted that they “could not compare”. The reviewer stayed one night at the venue. The remaining three guests attended weddings hosted by the Florence Guest Farm events manager. The weddings were hosted in May 2019, November 2017, and July 2015 respectively. These guests refer to the venue as a “unique wedding venue”, a “really beautiful and relaxing” environment, an “absolutely beautiful wedding venue for the perfect day” and the “perfect place”. Two common themes revealed through reviews about Florence Guest Farm, written by hosts and guests alike, were the attention to detail and the service provided by staff, and secondly, the quality of the food. Two of the three guests “recommend Florence Guest Farm as a wedding venue”.

The final four reviews were written by former visitors of Florence Guest Farm, who added comments about weddings in their reviews. These commenters did not attend a wedding at

the venue. One of the reviewers was passing through for a business trip elsewhere. They mentioned that the setting and facilities were “stunning” and “great” and suggested Florence to those “looking for a wedding venue”. One tourist to the area noted that they had a “great time in Chrissiesmeer” in September 2022, however “at the time of writing, most of the weekends seemed to be reserved for weddings”. This reviewer mentioned that Florence is a “very sought after wedding venue…so [one] might battle getting weekend reservations”. Nonetheless, the reviewer noted the venue as a “fantastic stay to use as a base for exploring around the area”. Regarding a January 2020 trip, a reviewer passing through on their way to Kruger National Park likewise noted that the venue is “primarily a wedding venue and [thought] a wedding there would be magical!” Similarly, a German traveller that visited in September 2018 wrote that “the extensive terrain is perfect as a wedding location”.

5.5. Image Analysis: Comparative Contemporary Dataset

Of all the small businesses reviewed in Chrissiesmeer at the start of this study and throughout, 11 establishments had a location tag on Instagram and each of which was added to the image analysis (Table 4). These venues were among the more commonly mentioned in Chrissiesmeer through key-informant interviews, questionnaires, and online reviews. These venues included the following:

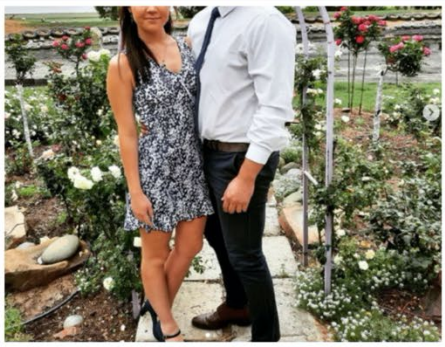
Table 4 Instagram Analysis of Chrissiesmeer, Lake Chrissie and tourism-related businesses in the area.

Instagram Location Tag	Total Posts	Images incl. Plants	Images incl. Animals			
			Wildlife: Farm animals	Wildlife: Hunting	Fish	Birds
Chrissiesmeer	939	13	17	7	21	9
Lake Chrissie	99	1	-	1	-	2
Chrissiesmeer Tourism + Booking	6	1	-	-	-	-
The Billiard Room	26	1	-	-	-	-
The Gin Shop	71	-	-	-	-	-
John Jack Inn	12	-	-	-	-	-
Lake Chrissie Lodge	10	-	-	-	-	-
Miss Chrissie Country House	14	-	1	-	-	2
Florence Guest Farm	432	21	3	-	-	1
Teen Die Meer	12	-	-	-	3	-
Springgrove Estate	93	2	-	-	-	-
	1714	39 (2.28%)	21 (1.23%)	7 (0.01%)	26 (1.51%)	14 (0.82%)

Three dates recorded in Tables 5 through 7 display the date of every post which included a flower in bloom or any animal sightings on Instagram. All 1714 posts collected were reviewed and categorised into one (or more) of four sightings, namely posts that included flowers in bloom or crops, any domesticated farm animals or livestock, any posts of wildlife that included game, buck or any wild animals related to hunting, fish, and birdlife (Tables 6 and 7). These posts account for 6.18% of all the Instagram posts reviewed, with the location tags of Chrissiesmeer and Florence Guest Farm accounting for a large segment of this portion of reviews. All the posts, per category, were analysed for the greater Chrissiesmeer area and the location tags for each of the available Chrissiesmeer establishments. Of these posts, each category presented an identity cluster of each plant and animal species and each contemporary database was assessed as such. These clusters include seasonal flowers,

freshwater fish, Highveld buck/game and birdlife. Furthermore, the dataset for the final group, domesticated farm animals, was assessed as an integral portion of the relation between nature and society in Chrissiesmeer, the role nature plays in tourism and the meaning of nature-based experiences for tourists.

Table 5 Valid dates on Instagram posts of seasonal flowers cluster in Chrissiesmeer.

Seasonal Flowers	Valid Post Dates (D-M-Y)	
	14 August 2017	10 December 2016
		
05-04-2014		
29-12-2015		
10-12-2016		
08-01-2017	16 October 2021	21 December 2021
07-04-2017		
14-08-2017		
18-02-2018		
20-03-2018		
20-09-2018		
05-11-2018		
02-12-2018		
24-12-2018		
25-12-2018		
30-12-2018		
	25 December 2018	20 September 2018
15-03-2019		
11-04-2019		
20-02-2020		
20-01-2020		
11-03-2020		
23-03-2020		
24-10-2020		
31-10-2020		
25-11-2020		
01-12-2020		
11-04-2021	31 October 2020	20 March 2018
30-09-2021		
16-10-2021		
31-10-2021		
21-12-2021		

5.5.1. Plant and Flowers Image Analysis

A total of 39 posts were used to compile the contemporary dataset for seasonal flowers, while six additional posts were excluded because they were posted significantly later than the date they were initially taken. The trend in the data (Table 5) shows the predominant phenophase of seasonal flowers in the Chrissiesmeer area. The season ranges from mid-to-late September (20 September~) to early April annually (11 April~), with an outlier in 2017 for a date recorded in mid-August (14 August 2017). As this post did not indicate it was a late post, it was provisionally included in the record. The year 2018 and 2020 provided the widest spread of data, slightly shared with 2021, while the remaining years account for one to three posts per year respectively. Four years (2014, 2015, 2016 and 2019) revealed dates that coincide with the average seasonal period as 2018, 2020 and 2021, excluding the outlier post of 2017. 2019 dates are limited to two mid-autumn dates. The flowers included in the seasonal flower cluster include a variety of 57 wildflowers identified in the area and specified on the Chrissiesmeer information page (Chrissiesmeer, 2015), including indigenous orchids. Furthermore, roses (*Rosa*), daisies (*Leucanthemum vulgare*), lavenders (*Lavandula*) and wisterias (*Wisteria Sinensis*) were among other plant taxa identified in the image analysis process.

Table 6 Valid dates on Instagram posts of the bird, wildlife, and livestock species in Chrissiesmeer.

	Valid Post Dates (D-M-Y)		
		10 February 2019	27 September 2021
Birds	10-02-2019 09-11-2020 30-03-2021 04-04-2021 27-09-2021		
	30-09-2018	30 September 2018	18 July 2021
Wildlife: Hunting	21-01-2020 20-07-2020 16-06-2020 29-11-2020 18-07-2021 12-08-2021		
		16 November 2018	02 May 2021
Wildlife: Domesticated Animals	02-12-2016 08-01-2017 21-03-2017 02-05-2017 16-02-2018 20-03-2018 16-11-2018 17-12-2018 08-06-2019 20-07-2019 30-12-2019 11-04-2020 08-07-2020 15-09-2020 09-11-2020 15-12-2020 20-02-2021 29-05-2021 02-05-2021 27-01-2022 30-01-2022		
		15 October 2020	21 July 2020
			
		02 December 2016	21 March 2017
			

5.5.2. Animal Image Analysis

The posts about fish resembled that of flowers, accounting for 1.51% of the Chrissiesmeer images. There was a total of 26 posts that included fish and each of these posts were included in the dataset detailed in Table 7. The posts were mainly posted from 2017 to 2021, with 2019, 2020 and 2021 providing the most Instagram posts. Throughout the years, the fishing seasonal posts differ throughout the dataset. There appears to be a close-to-equal spread of the dates with dates recorded from every season. Chronologically, the dates from 2017 were posted in mid-to late-winter and 2018 recorded an early autumn and mid-spring set of dates. The time period found through the 2019 posts shows more activity during the summer and early autumn months (~28 April), a quiet winter period, with a resurgence in mid-Spring (~20 October) throughout the later summer months. A similar trend is seen in 2021 with seasonal dates which range from mid-spring to early autumn, with one mid-winter date (17 July), while 2020 predominantly shows a large amount of activity during the late spring and early summer months (30 November ~ mid-December). This can be attributed to the onset of the COVID-19 pandemic and subsequent lockdown regulations which restricted travel in South Africa for a large segment of the year (26 March 2019 – 14 September 2020; South African Government, 2022). One of the more notable fish species identified and mentioned through the image and Instagram post analysis was Bass (non-specific).

Table 7 Valid dates on Instagram posts of fish species in Chrissiesmeer.

	Valid Post Dates (D-M-Y)	
	14 December 2021	06 November 2021
Fishing		
	07 December 2020	05 November 2018
		
	24 January 2020	17 July 2021
		

16-07-2017
14-08-2017

11-03-2018
03-10-2018
05-11-2018

01-01-2019
25-03-2019
28-04-2019
20-10-2019
01-11-2019
19-12-2019
26-12-2019
29-12-2019

24-01-2020
25-02-2020
11-11-2020
01-12-2020
07-12-2020
13-12-2020
30-12-2020

10-01-2021
04-04-2021
17-07-2021
06-11-2021
05-12-2021
14-12-2021

Posts that included birds were fairly scarce, with only six valid posts recorded out of a total of 14 images posted. The dates vary with no pattern forming through the years. There was one summer date that followed in 2019, and two spring and two autumn dates likewise recorded. Some of the bird species identified, nonetheless, include the Blue Crane (*Anthropoides paradisea*), Falcon (*Falco peregrinus*), a Stonechat (*Saxicola torquatus*), Ant-Eating Chat (Myrmecocichla formicivora), Secretary Bird (*Sagittarius serpentarius*) and a Black-headed

Heron (*Ardea melanocephala*). The same can be said for all posts including game and wildlife in Instagram posts that described hunting in the Chrissiesmeer area, which only provided seven total posts all included in the record. Similarly, there is not enough data to present a pattern throughout the years based on this data size. Most of these posts were posted during the winter months of June to August with two late spring posts and one mid-summer date (Table 6). The only three species identified through the image and Instagram post analysis were Warthogs (*Phacochoerus africanus*), Springbok (*Antidorcas marsupialis*) and Blesbok (*Damaliscus pygargus phillipsi*).

5.6. Conclusion

The key findings of this study from the key-informant semi-structured interviews, comprehensive tourist questionnaires, online review analysis and image analysis show key themes about the tourism sector at Chrissiesmeer and the perceptions tourists and tourism operators hold. Tourism operators shared their overall challenges and issues with the tourism sector in Chrissiesmeer. One of the most prevalent was the scarcity of municipal support small businesses received from local government for investment, revitalization and the marketing of Chrissiesmeer as a tourist destination that a larger scale. Throughout each data collection stage, event-based tourism through nature and phenology-based tourism was highlighted and identified as a highly lucrative and important segment of the tourism sector. Some annual events that span back into the history of Chrissiesmeer for over a decade include the Frog Night, Crane, Flamingo, and Wildflower Day festivals. This area is well known for other nature-based forms of tourism, such as birding, fishing, camping, and hiking, which provide tourists with experiences and interests that promote re-visitation. Tourist activity is often promoted

by an event in the area, which are most lucrative, particularly during large-scale or private events. Regarding private events, Chrissiesmeer is well known for the area's successful wedding venues that have proved to provide the town with large numbers of tourist visitation and an identity-building opportunity. The integrated connection between events-based and nature-based tourism is the main purpose of gauging the perceptions of tourism operators and tourists on environmental and climate change, at large and in Chrissiesmeer. It appears that tourism operators are primarily either unconcerned or undereducated on the topic of environmental and climate change. A portion of the respondents believe that they will not be affected by the impact of climate change in their lifespan and thus, share no concerns about the present and the potential effects climate change will have on tourism at Chrissiesmeer and their businesses. Former tourists of the area are slightly more engaged with the topic of climate change and share slightly more concerns about the potential impact climate change may have on tourism in the Highveld.

6. Discussion

6.1. Introduction

This study aimed to examine the climate-related and phenology-related threats to the tourism industry at Chrissiesmeer. To gain an understanding of tourism at Chrissiesmeer, a mixed-method methodology was adopted to examine the tourism industry from the perspective of tourism operators, and former tourists, including secondary data from online and print sources. Key-informant semi-structured interviews were conducted with tourism operators and comprehensive tourist questionnaires were disseminated to former tourists to gauge their experiences of the Chrissiesmeer tourism sector and perceptions of climate change and climate-related threats to tourism in the future. These methods likewise provided insight into the predictability and sustainability of tourist activities and annual events, and the mitigative or sustainable programs small businesses had put in place to address the current and future effects of climate change. The discussion will look at the relationships between small-town tourism, nature-based tourism and wedding tourism have become the foundation of the Chrissiesmeer tourism sector. This analysis shows the extent to which each form of tourism is underpinned by events-based tourism and the natural environment, which have contributed significantly to the success of each sector. Rising temperatures and climate change have the potential to put the sustainability of the Chrissiesmeer tourism sector at risk (Sakurai *et al*., 2011; Mahlangu and Fitchett, 2019). It is thus of interest to examine the current and future effects of climate change and the small town's preparedness and capability to combat and mitigate these impacts. An analysis of the findings of this study will be conducted and contextualised with the body of literature that exists on the key topics of

small-town and events-based tourism, and wedding tourism, juxtaposed with the discipline of climate change end sustainable tourism.

6.2. Dynamics of an Events-Based Small-Town Tourist Offering

6.2.1. Chrissiesmeer: Small-Town Tourism Opportunities and Challenges

Small-town tourism is highly dependent on a place-specific asset (Halseth and Meiklejohn, 2009; Kontsiwe and Visser, 2019). This asset can range from the natural environment to cultural or historical elements of the town in question and these elements are used as the foundation of the tourism sector of the small town. On the contrary, events-based tourism can focus on a variety of potential attractions. In this regard, the event itself becomes the primary tourist attraction (Sakurai *et al.*, 2011; Kontsiwe and Visser, 2019). Events and festivals can range from music, food, sports, culture and heritage, art, ideology, and community (Sakurai *et al.*, 2011; Donaldson, 2021). Certain events and festivals are associated with community values and identity building, as they usually tend to provide a sense of pride for residents and regular attendees of these events. Despite being held over a fairly short period of time, festivals can occur regularly and are often public events. Although festivals are categorised as events, authors have distinguished between the two by mentioning that festivals are particularly concerned with a cultural experience and celebration that has a definitive social element and theme (Wilson *et al.,* 2017). Chrissiesmeer, as a small town, experiences both the occurrence of events and festivals in different capacities. This small town has mentioned the exponential benefits the economy and businesses in the area

experience due to these events and festivals, with tourism operators only mentioning a few negative effects of such events.

Tourism development has been identified as a tool to reinvigorate stagnated small towns in Southern Africa policy, through the promotion of job creation and overall economic stimulation (Kontsiwe and Visser, 2019). However, it has been noted through small-town tourism studies and rural studies in South Africa that some of the key issues include a lack of municipal support regarding tourism and service provision. The findings in this study support both claims. Through the interviews, tourism operators shared that they struggle with a lack of support from the local municipalities, regarding tourism development, and secondly, a lack of service provision. Tourist operators believe that the lack of service provision has contributed negatively to the operation of their businesses, while some business owners in Chrissiesmeer have taken up providing the services themselves.

Binns and Nel (2002) stated that a key element of success in small-town tourism is the need for proper and adequate management of tourist products. A study conducted on Aliwal North, Eastern Cape, Kontsiwe and Visser (2019) found that the mismanagement of such products contributes to a lack of LED support for rural destinations. As previously mentioned, small towns are dependent on their place-specific assets and as highlighted through this study, the most lucrative assets in Chrissiesmeer are based on the natural environment and the town's cultural and historical significance. Although diversification contributes to the sustainability of a tourism sector particularly in local economies (Halseth and Meiklejohn, 2009; Donaldson, 2021), in this particular instance, the events and tourism activities in Chrissiesmeer lack a fundamental element of administration, adequate regulation and protection of the town's key tourism assets and the natural environment the tourism sector relies on. The significant

lack of municipal support in this instance contributes greatly to the issue. Primarily, the business owners in the small-town interchange the administration and organisation of tourist events and activities in the area throughout the years. There is a lack of consistency in the administration of activities and events in the area, as business owners interchange roles constantly. This is most evident through the annual events hosted in Chrissiesmeer. Although authors have not problematised a lack of consistency in the administrative roles of small-town tourism boards, a lack of leadership in small-town tourist economies has been linked to mismanagement of strategic tourism offerings in small towns across Southern Africa (Panyik *et al*., 2011; Kontsiwe and Visser, 2019).

Cater and Jones (1989, in Halseth and Meiklejohn, 2009) discussed the concept of managerialism, which speaks to the role key stakeholders play in managing and distributing opportunities, in this context, in the tourism sector. The lack of cohesion between stakeholders in the tourism sector in Chrissiesmeer is evident across different layers. It appears that tourism operators in small towns are not provided opportunities to market themselves as a destination when the town itself cannot implement effective marketing strategies (Gibb and Nel, 2007; Panyik *et al.,* 2011, Kontsiwe and Visser, 2019). Through discussions about marketing, it become evident that tourism operators and particularly business owners in the area were unsupported by local government agencies and tourism boards regarding the promotion and visibility of their small town (Panyik *et al*., 2011, Kontsiwe and Visser, 2019). This is further supported by the experiences of former tourists of the area, who both visited Chrissiesmeer for a particular or personal reason and were completely unaware of many of the tourist facilities and activities at the time of their trip. The majority of questionnaire respondents stated that they did not know that Chrissiesmeer had

such a diverse tourism industry at the time the questionnaire was completed, long after they had visited the area.

Furthermore, the lack of social cohesion between business owners in the area halted the innovation and the development of the tourism industry in this small town (Rogerson, 2002; Panyik *et al*., 2011; Kontsiwe and Visser, 2019). Tourism operators were keenly aware of the need for cooperation because of the level of codependency in the organisation of tourist events, festivals and activities. However, tourist operators felt unsupported by their counterparts. Chrissiesmeer tourism operators believe that there is a fundamental difference in the business and tourism goals among the town's business owners, which has been exacerbated by a relationship breakdown and lack of understanding between stakeholders. The lack of trust and confidence in local municipalities and the breakdown of local stakeholder relationships have been identified as two of the key causes of the mismanagement of tourism sectors of small towns in Southern Africa (Kontsiwe and Visser, 2019).

Tourism operators mainly struggle with marketing their businesses and Chrissiesmeer on a larger scale, which presents an issue because the economic prosperity of small-town tourism lies in the effective marketing of a small town as a tourist destination (Kontsiwe and Visser, 2019). Small businesses rely on the town's identity and culture using the area's defining elements, such as the environment, food, or history (Pavlakovič *et al*., 2016; Rogerson and Rogerson, 2021a). The need for small businesses to market themselves within and outside of the 'small-town' context is imperative as small towns have a low threshold population (Kontsiwe and Visser, 2019). These areas often do not have easy access to large quantities of tourists and customers, as compared to urban areas. There is a necessity for small businesses in Chrissiesmeer to ensure that their marketing strategies entice tourists not only to visit the

area but to specifically visit their businesses (Kontsiwe and Visser, 2019). This has been made slightly easier and more accessible through social media and internet-based niche market platforms. This is a strategy that has only been successful for the wedding venues in the area. The remaining businesses and tourist activities are more dependent on the overflow of wedding guests, instead of tourists visiting their establishments.

One of the more notable appeals for tourists to visit small towns is to “escape the city” and to take a break from urban life. This “country” and “farm” living experience was shared among tourist respondents of the study, with a few tourist operators aiming to market their tourist products and services on this foundation. Small towns, such as Chrissiesmeer, can benefit from this trend, where a small town becomes a tourist product because of its contrast to urban areas. This is a growing niche tourism market (Rogerson and Rogerson, 2021b). However, proximity is of great importance as there is a limited distance a tourist is willing to travel outside of their residential area, for a short break from the city. Chrissiesmeer is a prime example of such a situation. The small town is located along the M17, and it is just shy of three hours away from Johannesburg and Pretoria, two of South Africa’s most populous capital cities. Two wedding venues mentioned that they had set their business plan on this principle. They hoped to create a farm experience for their customers, which would become a weekend-long wedding package that provides wedding hosts and their guests a full extended farm experience instead of hosting shorter day-long wedding packages. Two of the wedding venue representatives mentioned that the limited distance guests were willing to travel from major cities, such as Pretoria and Johannesburg, benefit their business model. Former tourists to the area, in different capacities, noted that their trip to Chrissiesmeer served as an opportunity to “recharge” and “take a break” from their urban residence. What

made this possible for small-town tourists was the “environment” and “surroundings”. The natural environment and “scenery” were often complimented and celebrated by former tourists of the area, mostly through online reviews. This includes all the natural features Chrissiesmeer is known for, such as the lakes and pans, its forests, farms, fauna, and flora. Of all the natural features mentioned, the lakes and pans made up a large quantity of nature-related mentions, by tourists in online reviews and the comprehensive tourism questionnaire. Forests were likewise among some of the most mentioned natural features, as a few establishments had a forest on their property for tourists to take walks and host wedding ceremonies. Furthermore, interactions with animals, particularly farm animals, were admired by a few online reviewers. In this regard, small-town tourism, as an escape, has a great emphasis on nature. Furthermore, a large quantity of the tourism offerings in Chrissiesmeer relies on the natural environment, features, plants, and animals as the basis of the tourism for the majority of the events and festivals hosted in the area (Halseth and Meiklejohn, 2009; Sakurai *et al.*, 2011).

6.2.2. The Impact of Events-Based Tourism on The Chrissiesmeer Tourism Sector

Event-based tourism is a form of special-interest travel, where an event is the key point of interest and purpose for travel (Getz, 2008; Laing, 2018; Getz and Page, 2016). Getz and Page (2016) mention these events have taken up the role of marketing destinations because they contribute to the attractiveness of the destination. The lucrative nature of events-based tourism affects the tourism sector of any location the event is held, as this requires the need for various alternating tourist services (Laing, 2018; Panyik *et al.*, 2011). This includes the

availability of adequate transportation, tourist attractions, accommodation, food services, and adequate infrastructure, particularly for the event itself (Panyik *et al.*, 2011). Events can provide tourists with an adequate reason to visit destinations at any given time, which has the incredible ability to counter declining tourist visitation rates (Sakurai *et al.*, 2011). In the case of Chrissiesmeer, the small town holds events both in the summer peak season and during the winter season. Furthermore, the weekly wedding events contribute to somewhat regular tourist visitation levels throughout the year, depending on the size of the wedding. Through the results, it appears that weddings, festivals, and other events have a huge influence on tourist visitation and the business operations of all the small towns in Chrissiesmeer.

The tourism sector in Chrissiesmeer is highly dependent on the occurrences of events. These events are likewise closely connected to nature-based or wedding tourism. In particular, nature-based tourism and events-based tourism in Chrissiesmeer are deeply interconnected, as certain activities of nature-based tourism are often only clearly defined by the itineraries and services provided during events. Without these events, the structure of the tourism offerings decreases. Similarly, the majority of the events largely rely on the natural environment, fauna and flora and are often time-sensitive, because these events are phenology-based and are dependent on the presence of a particular plant or animal species as the main attraction (Sakurai *et al*., 2011). These events include the Frog Night Festival, the Crane and Flamingo birding festivals and the Wildflower Day festival, all held annually. These events have become pillars of the Chrissiesmeer tourism sector throughout the years, spanning back over 15 years according to some of the tourism operators. The occurrence of

these events shapes the tourism sector's peak seasons as they contribute significantly to an increase in the town's tourist visitation patterns (Panyik *et al.,* 2011).

The Frog Night Festival is one of the more popular events hosted at Chrissiesmeer by the *Matotoland* EcoTourism Association. The Frog Night Festival included activities for adults and children, includes frog-related activities and family recreation, and is, thus, inclusive of the entire family unit and larger demography. The same can be said for the Wildflower, Crane, and Flamingo Festivals. Frog Night was frequently mentioned among tourism operators, despite low mentions of the festival among tourist responses. Only one of the questionnaire respondents attended the event and only two mentioned that they were aware of the festival. There were similarly only two mentions of the Frog Night Festival through online reviews, both posted in December of 2014 and 2015 respectively. These online reviewers and former tourists mentioned the "profuse frog…life" in the area and how they enjoyed "searching for frogs" during the festival held in the December of 2014. One tourism operator mentioned that "the people are positive about the Frog Night festival" which has led them to believe that the festival is popular among former tourists. Although mentions were low among former tourists, there were more mentions of the frog-related activities tourists enjoyed when they visited Chrissiesmeer. One questionnaire respondent mentioned that the most memorable feature of their trip was the "frogging", while another mentioned that "listen[ing] to the frogs under the Milky Way" made for a wonderful experience on their trip. One tourist mentioned in a review that they were hoping to "plan around [the Frog Night Festival on their] next visit" to Chrissiesmeer, which was shared by a few questionnaire respondents who stated that they would return for the event. This reviewer said the same about the "annual Crane Festival…and Wildflower Day".

The Frog Night Festival is said to supply the small town with around “150 to 200 people” tourists per event, which the small-town struggles to fully accommodate according to tourism operators. This is mainly attributed to the fact that small towns are primarily made for their residents and thus, there is a lack of accommodation facilities for tourists, despite the smaller population size of rural communities (Pavlakovič *et al*., 2016). This festival is arguably one of the most successful events Chrissiesmeer hosts because every one of the tourism operators spoke about the positive economic effect it has had on their businesses during the summer season (early to mid-December). This is likewise attributed to the Wildflower Day Festival, which is held in summer (early January). Regarding the intersection between nature-based tourism and this event, the abundant frog population present in Chrissiesmeer makes it possible for such an event to be hosted, and if organised adequately, to run sustainability into the town’s future. One tourism operator mentioned that Chrissiesmeer is “known for having bullfrogs”, with another mentioning that “[they] are very proud of frogs”.

The Crane and Flamingo Festivals were similarly mentioned by tourism operators, including mentions of birding activities. Birding in Chrissiesmeer was frequently mentioned and popular among former tourists of the area, primarily in online reviews, and among tourist operators who participate in the activity themselves. A few of the online reviewers mentioned that they had specifically travelled to Chrissiesmeer for the birding events and to engage in the birding activities during the birding season. Those who were not primarily in the area for birding mentioned the “prolific” bird species and how this positively influenced their experience of Chrissiesmeer and “nature”.

The majority of the mentions of the Crane Festival by tourist operators were centred on the proceedings of the event. The respondents mentioned that the area conducted population

counts on all the bird communities in the area annually. One respondent mentioned that the "birding events" were cancelled one year due to a clash with the counts. Furthermore, the preparation of the Crane Festival calls for cooperation between tourism operators, and between the administrators of the event and local farmers with a large crane, flamingo, and other bird populations on their properties. The hosts of these events require access to these birding and frogging (for the Frog Night Festival) hotspots as points of interest for each event. Interview respondents did mention that the success of the Crane Festival had decreased over the years mainly due to the "strife amongst the [key role] players" of the Chrissiesmeer tourism sector. Former tourists, in questionnaires and reviews, primarily noted that they were aware of this event, with none mentioning that they had attended one of the birding events festivals before. As mentioned above, the majority of crane mentions were with regards to the birding activity in the area.

The Flamingo Festival is likewise popular because the bird species are particularly unique and rare in Southern Africa. The Crane Festival is popular because the Blue Crane is South Africa's national bird. These events capitalise on the popularity of each of the two bird species. Furthermore, Chrissiesmeer's identity as the Lake District of South Africa and a protected wetlands and grasslands area contributes to the promotion of any nature-based events and tourism activities. The rarity of these natural environments and bird species in Southern Africa and internationally has the potential to pique the interest of a particular niche ecological market (Rogerson and Rogerson, 2021b). To a certain degree, this is the current experience with flamingos in Chrissiesmeer and the Flamingo Festival as an extension. One of the questionnaire respondents mentioned that "the flamingos" were the most memorable feature of Chrissiesmeer. Some former tourists stated that they would return to

Chrissiesmeer for Flamingo Festival in the future after learning of the event. Nonetheless, the Crane and Flamingo Festivals were hosted during the winter season in June and July. Chrissiesmeer does not have one particular season that stands out as the peak season unlike the experience of coastal cities across southern Africa (Frederick *et al*., 2020), and the tourism motivations differ. Chrissiesmeer experiences visitation in the winter months just as much as it does during the summer months, although the summer months experience more traffic. This is attributed to the favourable summer temperatures, the phenological phases of plant and animal species and the increased amount of private and public events that are subsequently promoted by the aforementioned factors. In Chrissiesmeer, however, tourist operators believe that winter tourist visitation is promoted by the birding season and the birding-related events and tourist activities.

Wildflower Day is usually hosted in early January of every year, based on the timing of the wildflower flowering season. One tourist operator mentioned that much like the Frog Night Festival, the Wildflower Day Festival has been occurring for well over 15 years. There were a few former tourists that travelled to Chrissiesmeer to attend the event, with one of the questionnaire respondents mentioning that they would return to Chrissiesmeer in the future for Wildflower Day. Some online reviewers shared the same sentiments. As this event is usually hosted at the height of the summer season, it is unclear through respondent engagement whether the event's attendance rates are aided by the summer seasons or if the event contributes to the summer visitation. Nonetheless, Wildflower Day, as one of Chrissiesmeer's historical phenology-based events, has likewise contributed to the identity-building of Chrissiesmeer as a destination and the town's tourism sector throughout the years (Sakurai *et al.*, 2011).

The Lake Chrissie Craft Liquor Fest, hosted in October of every month, had only been in operation for three years before the COVID-19 pandemic. More recent events differ from the events hosted by the *Matotoland* EcoTourism Association. These new events are hosted by a collection of establishments: The Billiard Room, John Jack Inn, and the Gin Shop in collaboration with other private stakeholders (Figure 11). This event had begun gathering a following before it was shut down by safety regulations put forward by the national government during the height of the COVID-19 pandemic. One of the event hosts mentioned that the event was able to bring in up to "60 couples", which is similar to the number of guests the town attracts for their Frog Night Festival. Craft beer tourism has been on the rise globally (Gardi, 2014; Reid, 2021) due to the globalisation of the Oktoberfest annual event, an annual beer festival that originated in German on 12 October 1810 that has become a global celebration of the craft of beer-making over the years (Gardi, 2014). A string of Oktoberfest events are held across the world from mid-September to October annually and the Lake Chrissie Craft Liquor Fest is usually hosted in the month of October annually (Reid, 2021). This local event appears to mirror some of the patterns of global craft beer and liquor tourism and has proven to increase tourist visitations during the time of the event. A representative of the event mentioned that one of the main issues they encountered when organising an event was the lack of support from other tourism operators and business owners. The event hosts mention that they do not have enough capacity to accommodate all the guests of the festival and needed the assistance of other establishments to help accommodate the number of guests the event received. Furthermore, as small towns are scarce on resources and personnel, the hosts of such an event would need the assistance and support of other establishments in the area to manage an event of such a capacity (Kontsiwe and Visser, 2019).



Figure 11 Lake Chrissie Craft Beer Poster for 2017 (Adapted after Chrissiesmeer, 2015).

Chrissiesmeer's wedding tourism mimics global wedding tourism trends. Wedding tourism is likewise highly dependent on the outdoors and natural environments as a backdrop for picturesque wedding moments (Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019). Wedding destinations are marketed as the ideal location to get married at, what a respondent of Florence Guest Farm describes as "a place people want to get married", instead of a place one simply "can get married". Literature on wedding tourism shows that there is a clear link between wedding destinations and the natural environment (Seebaluk *et al.*, 2014; Rogerson and Wolfaardt, 2015; Mahlangu and Fitchett, 2019). These natural elements range from beaches (Rogerson and Wolfaardt, 2015) to gardens, forests, and orchards (Mahlangu and Fitchett, 2019) or simply areas with warmer temperatures (Khodzhaeva, 2016). Each of

the respondents, including venue representatives, who got married or attended a wedding in Chrissiesmeer, all mentioned the outdoors. The wedding venue representatives mentioned that they host a large majority of their clients who choose to have their wedding pictures taken by the pan or the Vaal River respectively. One representative mentioned that some wedding photographers preferred nature-set wedding pictures for their clients. For former tourists and guests of the wedding, mentions of weddings included: a “fairytale” forest wedding, and a couple mentioning that they got married “under this magnificent tree and surrounded by ’nature’s finest” which made it “the best day of [their] life”. A couple that got married at Florence mentioned how their ceremony “between the Pine trees”, noting how the beauty of the venue’s built and natural environment contributed to making the ’couple’s “special day perfect”. “Perfect” was how another reviewer described their wedding day at Florence too. Wedding guests mainly commented on the amenities and the service received at the respective wedding venues they visited, with some mentions of how some wedding venues were “absolutely breathtaking”. The most common terms used to describe the wedding venues identified in this study were “beautiful”, “stunning”, and “unique”.

The two major wedding venues maintain a regular and sustained demand for their products seemingly throughout the year. One tourist to the area noted that they had a “great time in Chrissiesmeer” in September 2022, however “at the time of writing, most of the weekends seemed to be reserved for weddings”. In the case of Florence Guest Farm, this wedding venue has achieved sustained success since its opening over a decade back, with the representative mentioning that the wedding venue hosts an average of 50 weekend-long weddings per year out of 52 weekends per year. Three of the respondents mentioned that the overflow of bookings for the Florence Guest House caused the venue owners to seek an alternative option

to avoid turning business away from the area. Smitfield wedding venue was the solution to this problem, and in so doing created a client base of their own which has resulted in early success for the novel wedding venue in the area. Smitfield representatives discussed their future bookings, which show that couples have booked the venue up to a year in advance. All this alludes to the fact that clients are eager to host their weddings in Chrissiesmeer. As mentioned by all tourism operators, the occurrence of weddings has contributed to tourism visitation in the area and the local businesses in the town. It is therefore noted that wedding guests who primarily travel to Chrissiesmeer to attend a wedding are given the opportunity to explore other tourist offerings in the town and employ the services of small businesses in the area.

6.2.2.1. The Intersection between Nature-based and Events-Based Tourism Explored

The nature-based tourism in Chrissiesmeer is just as dependent on the events as the majority of events hosted in the area are dependent on the natural environment. Events often provide a structured approach to nature-based tourist activities, which would otherwise be taken up by tourists independently. There are set programs for tourist activities in Chrissiesmeer, and an active tourism administration desk tourists can look to for assistance throughout their trip. These outlets do not exist in Chrissiesmeer outside of the occurrence of an event. Tourists usually have to make their way around the area, because there is no designated tourism board active throughout the year in the small town. However, tourism operators and Chrissiesmeer business owners are more than willing to assist and guide tourists with adequate information. This was the case with the majority of interview respondents and in particular Respondents

5; 7 and 8. These business owners freely provide information about birding trails and local points of interest, such as frogging and fishing spots, and cultural and historic sites, and encourage tourists to participate in the area's tourist activities. However, the only tour guide services provided throughout the year are hosted by Respondent 5. Without the assistance of Respondent 5, tourists are forced to trail the birding routes and visit each point of interest by their own means. As a few points of interest are located on private property, this means tourists are inhibited from accessing key elements of the town's tourist activities without the assistance of tourism operators in the area. Furthermore, this lack of administration means that the town only receives an indirect income from self-navigated nature-based tourism, as these tourist activities are unmonetised. Very few of the public points of interest in Chrissiesmeer require a fee, and thus, much of the income is received through accommodation, food and beverage services. The Chrissiesmeer tourism sector, thus, makes more of a profit when nature- and phenology-based events are hosted in the area because this ensures that the activities tourists partake in contribute more to the town's economy.

Phenology is the study of the biological responses of fauna and flora to seasonality (Sakurai *et al.*, 2011; Mahlangu and Fitchett, 2019), and what differentiates this form of tourism from nature-based tourism is the sensitivity to time and location. Phenology-based tourism presents any area with a robust ecosystem with a unique opportunity because biodiversity is location-specific and thus, this increases the competitive edge of that region (Roger and Donaldson, 2015; Kontsiwe and Visser, 2019; Mahlangu and Fitchett, 2019). The time-specific phenophases are used for events and festivals, which are unique to the region. Thus, these forms of tourism are incredibly lucrative tools of development, according to the literature on LED throughout the globe and in the context of South Africa. In Chrissiesmeer, this is indeed

the case. It is the historical events, such as the Frog Night, Crane, Flamingo and Wildflower Day Festivals, that contribute to Chrissiesmeer's identity as a tourist destination and help define the nature-based activities in the area. Chrissiesmeer was presented with a key and unique opportunity to use these events as a tool to invigorate and advance the tourism sector at Chrissiesmeer as the key elements of the nature-based events are unique (in themselves and as a collective) to the Chrissiesmeer area (Kontsiwe and Visser, 2019; Wilson *et al*., 2017; Rogerson and Rogerson, 2021a). With increasing stressors on the environment and a lack of organisation and leadership, these event stands the risk of becoming obsolete. The absence of the aforementioned festivals could potentially risk a collapse of the tourism sector in the area, as it is seen how integral the occurrence of events and festivals has been to the success and sustenance of the tourism industry at Chrissiesmeer.

6.3. Threats to Chrissiesmeer Tourism

6.3.1. Importance of Nature and Biodiversity in Chrissiesmeer

This study aimed to explore the extent to which the Chrissiesmeer tourism sector is reliant on climate and phenology, and through the findings, a few themes developed. The first is the reliance on plant and animal phenology as the key element of four of the town's major annual events. The second was the emphasis on the natural environment, fauna and flora in small-town tourism, through direct engagement as a resource for tourist activities and indirectly to create the countryside/farm and "break from the city" experience. Following this, it is the direct dependence small businesses have on the environment through agriculture as the primary supply of their products. Lastly, the importance of good weather for tourist activities

and weddings follows. The findings reveal that tourism in Chrissiesmeer has a high dependency on nature and the natural environment, and acutely on the phenophases of the plant and animal species that events are based on. It is of great importance to consider the potential effects on nature- and phenology-based tourism, through activities, amenities, and events in Chrissiesmeer as they play such a large role in the sustainability of the local economy (Sakurai *et al.,* 2011). Furthermore, because the ecosystem is at risk of climate and environmental change, the potential impact needs to be assessed to potentially combat the effects of these climate and environmental threats (Steyn and Spencer, 2012; Craig and Feng, 2018; Dogru *et al.*, 2019).

In Chrissiesmeer, the different offerings of events-based tourism range from festivals to weddings and other private events and each form of tourism holds a certain degree of dependence on the natural environment for operation. Thus, the *Matotoland* EcoTourism Association and small businesses in the town need the ability to predict key dates of the phenophases of plants and animal species that are most crucial for events and tourist activities to occur (Sakurai *et al.,* 2011). Predictability is necessary for nature- and phenology-based tourism, as businesses need to be able to predict specific dates and periods to organise their events and tourism products accurately (Sakurai *et al.,* 2011). This could be in the form of predicting the 'first flowering date' and blossoming season of a particular flower or plant or the migration, breeding and fledging patterns of different animal species of key events (Parmesan and Yohe, 2003; Denny, 2014; Inouye, 2022). Being able to predict the dates of fauna and flora phenophases will allow businesses to accurately prepare for the future (Sakurai *et al.,* 2011). They will be able to accurately select the most suitable time to host certain events and festivals, and tourist activities and to promote their festivals and the

Chrissiesmeer destination during its most lucrative season (Sakurai *et al.,* 2011; Mahlangu, 2018).

The dependency Chrissiesmeer's tourism sector has on nature, fauna and flora places the town's economy at an increasingly high risk of climate and environmental change (Halseth and Meiklejohn, 2009; Sakurai *et al.,* 2011; Steyn and Spencer, 2012). Shifting phonology has been identified as one of the most sensitive and immediate responses to climate change, which has a direct impact on the biological timing and responses of plant and animal species to seasonal change (Zhengong *et al.,* 2008; Li *et al.,* 2016). By employing phenological prediction models, such as flowering date forecasting, businesses can use these predictions as guidelines to plan for the future and to prepare for any potential impacts climate change and shifting phenology could present (Sakurai *et al.,* 2011; Li *et al.,* 2016). Furthermore, various animal taxa need to be tracked and recorded to understand the presence-absence phenophases, including the monitoring of any environmental changes in the area, as these changes in animal habitats could cause changes in animal phenophases ((Denny *et al.*, 2012; Inouye, 2022) and thus, the operation of events and tourism in the area (Sakurai *et al.,* 2011; Craig and Feng, 2018)

Phenology is "the timing of annually recurrent reproductive biological events" (Fitchett *et al.,* 2015, 460), and the phenological phases of animal and plant species are heavily dependent on seasonality, and climate, through precipitation and temperature (Cleland *et al.,* 2007; Grab and Craparo, 2011; Chambers *et al.,* 2013; Inouye, 2022). Any changes that occur to the environment and climate will directly impact the phenological timing of different plant and animal species. The ecosystem will need to adapt to the impacts and inadvertently change the phenological cycles of plant and animal taxa across the ecosystem (Parmesan, 2006;

Cleland *et al.,* 2007; Grab and Craparo, 2011; Chambers *et al.,* 2013; Yun *et al.,* 2017; Inouye, 2022). Changes in phenology through climate change are prominently place- and species-specific (Fitchett *et al.,* 2015). Furthermore, phenology is the most sensitive and immediate response to climate change (Cleland *et al.,* 2007; Inouye, 2022). The phenological shift could cause a few dire impacts on the Chrissiesmeer tourism sector, which include the potential loss of revenue from the four major phenology-based annual festivals and the impact on the wedding sector which accounts for a substantial portion of the economy (Sakurai *et al.*, 2011). Apart from this, small businesses in the area, which are heavily reliant on farming as a resource for their products, stores and the various farmers' markets held in the town throughout the year, are likewise at indirect risk of the effects of climate change and variability (Adole *et al.,* 2016).

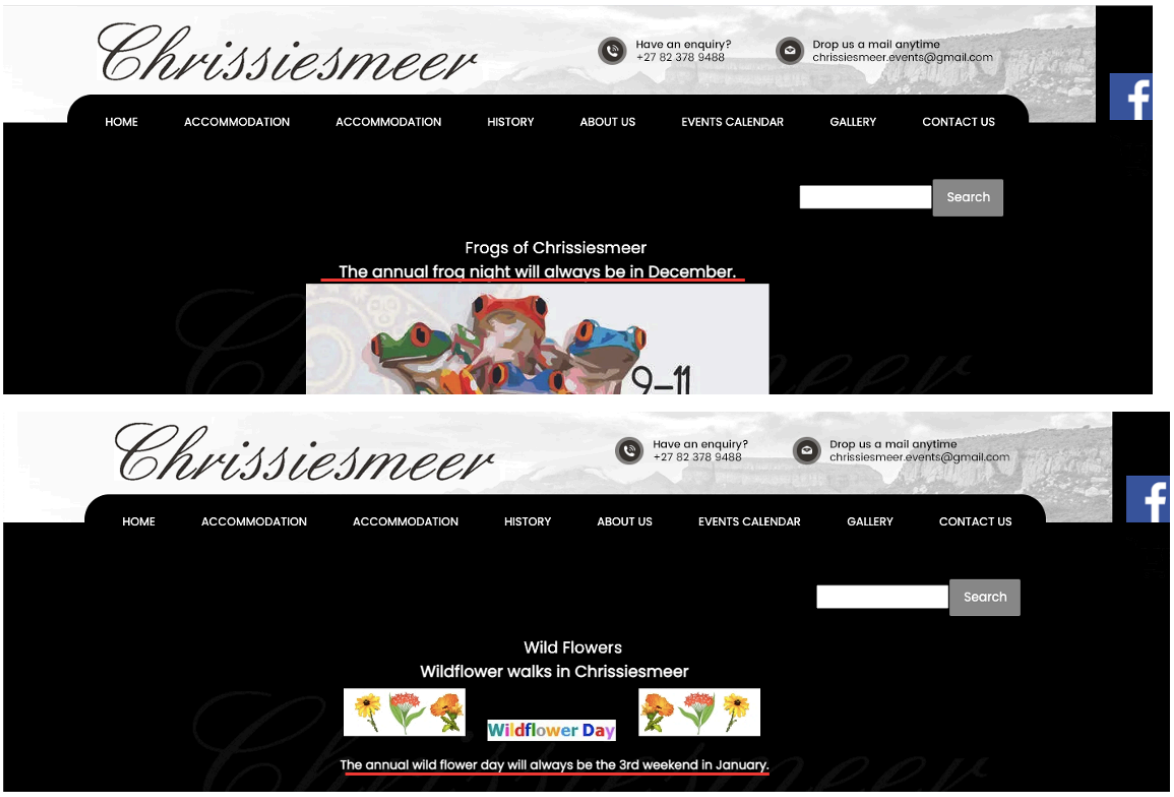


Figure 12 Screenshots of the Chrissiesmeer website on both the Frog Night and Wildflower Day Festival (Adapted after Chrissiesmeer, 2015).

With shifting phenology, the timing and success of nature-based events may vary (Sakurai *et al.,* 2011). This could potentially pose a threat to the overall success and sustainability of the tourism sector at various levels because nature-based festivals and events have been the cornerstone of the Chrissiesmeer tourism sector (Sakurai *et al.,* 2011). Climate change and shifting phenology poses two unique issues for tourism in Chrissiesmeer. The first, as mentioned above, affects the actual occurrence of the events and secondly, poses an identity issue for Chrissiesmeer should the historical events end and the natural environment, fauna and flora be threatened (Halseth and Meiklejohn, 2009; Sakurai *et al.,* 2011; Harmer and Rogerson, 2016; Liang, 2018). The Chrissiesmeer tourism board used phrases such as "the annual [phenology-based event] will always be in [specified date]" as seen in Figure 12 on the

web pages of the Wildflower Day and Frog Night Festival. This indicated that the town intends on continuing these annual events into the future, just as they have in the past.

This study includes an analysis of the continuity and predictability of events-based tourism in Chrissiesmeer, including any wedding venues. The Frog Night Festival is dependent on the presence of a variety of frog species that are foundational for the frog-related activities the festival relies on. And the Crane and the Flamingo festival are entirely dependent on the migration patterns of the variety of crane and flamingo populations. The Wildflower Festival is based on the blossoming season of the indigenous wildflowers in the Highveld area. The wedding venues are not specifically associated with any plant and animal taxa and phenophases. However, these wedding venues are all dependent on natural environments, such as gardens, forests and farms, and natural appeal as a part of their wedding experiences. Since each of these plant and animal clusters involves a variety of different types of the same species, a metanalysis of seasonal rates for the phenological changes of animal and plant clusters will be provided for a comparison with a comparative contemporary phenological phase.

6.3.2. Rising Global Temperatures and Phenological Shifts

Over the past few years, various academics have reviewed climatic data in different capacities to illustrate the rate at which global temperatures have been rising over the past century. Root (2003) recorded that global temperatures have increased by 0.6°C throughout the twentieth century. Ogawa-Onishi and Berry (2013) recorded that global temperatures had increased by 0.74°C from 1906 to 2005, or at a rate of 0.18°C per century. Hensen (2006, in

Cleland *et al.,* 2007) recorded a 0.85°C increase in global temperatures between the year 1880 to 2012 or a rate of 0.2°C per decade. Hulme *et al.* (2010, in Steyn and Spencer, 2012) and Midgley (2010, in Steyn and Spencer, 2012) predicted that January temperatures in South Africa will increase by 0.5 to 1.0°C along the coasts and 2.5 to 4.5°C in the interior by 2050.

The increase in global temperatures has a significant effect on phenology and seasonality, as this determines the biological responses plant and animal species have in relation to seasonal change driven by temperature changes and variations (Miller-Rushing & Primack, 2008). Because shifting phenology is one of the earliest responses to climate change, changes in temperature and rainfall directly impact vegetation reproduction and growth and thus, the habitats of different animal species (Inouye, 2022), which in South Africa could present as droughts, extreme weather events, sea-level rise, stark decrease in rainfall, veld fires, and extensive ecological changes (Steyn and Spencer, 2012; Fitchett *et al.*, 2016).

6.3.3. Chrissiesmeer Plant Phenological Phases

This section aims to determine how far along climate change will impact the phenological phases of plant and flower species in the Chrissiesmeer area, for a few reasons. Chrissiesmeer is an agricultural area and a few local businesses and festivals, such as the Liquor Fest and smaller farmers' markets, rely on the goods provided by local farmers. Secondly, the lush greenery is important to sustain the natural backdrop and country scenery Chrissiesmeer has become known for. It is known as a rural escape from the urban destination. This is similarly related to the agricultural sector as this niche tourism is based on the authenticity of the 'farm experiences' tourists are looking for when vacationing in rural South Africa and Chrissiesmeer

in particular. Furthermore, the wedding industry uses the natural environment to a large extent, feeding off the farm experiences, while creating unique experiences, much like hosting a wedding ceremony in a forest chapel or taking your wedding pictures by a pan or the Vaal River. Furthermore, each of the wedding venues canvased in this study all include manicured gardens closest to their buildings, with some gardens that include a variety of seasonal flowers. Lastly, the Wildflower Day festival is a historical event in Chrissiesmeer that has become an integral part of the town's identity as a destination. It is this event that is entirely based on the blossoming period of indigenous wildflowers in the area for the event to occur. A change in the phenophases of this flower cluster could result in an alternation in the short-term success and long-term sustainability of this longstanding event.

Globally, more studies have been conducted in locations in the northern hemisphere on plant species such as the cherry blossoms (Miller-Rushing *et al.*, 2007; Wang *et al.,* 2017), roses, lavenders, and seasonal flower clusters (Parmesan and Yohe, 2003; Root *et al.,* 2003). This is mainly attributed to the widespread Cherry Blossom Festivals in Japan, China and across North American states (Miller-Rushing *et al.,* 2007; Wang *et al.,* 2017) and to predict the seasonal first flowering dates of plants in more general conditions.

Plant phenology studies vary across the globe and taxa. In the northern hemisphere, phenological literature is dominated by cherry blossom phenological records due to the widespread cherry blossom festivals held in Japan, China and across North American cities. In South Africa, a few studies have been conducted regarding the phenological tracking of golden delicious apples (Grab and Craparo, 2011), granny Smith apples, jacarandas (Fitchett and Fani, 2018) and Namaqualand daisies (Synman and Fitchett, 2022). However, these records are only a few in comparison to the extent of literature conducted in the northern

hemisphere. The disparity is due to the lack of phenological records compiled on African plant taxon, whereas broad phenological records have been compiled through historical tracking in certain areas of the northern hemisphere (Fitchett and Fani, 2018). To determine any climate-related changes in the phenological phases of plant species, the phenological records must consist of data collected over a time period of 30 years or more (Fitchett and Fani, 2018). Southern Africa, and the African continent at large, require such phenological records to assess any changes to the phenophases of plant taxa that may have occurred over longer periods of time (Fitchett and Fani, 2018).

Phenological tracking and monitoring efforts need to be promoted, however, while these records go a miss, the use of contemporary datasets provides an alternative to the traditional phenological monitoring and tracking of plant species. Through the use of media sources, such as social media platforms, comparative contemporary datasets are able to provide the best possible estimate for future plant phenophases (Fitchett and Fani, 2018). This study aimed to formulate a contemporary dataset through Instagram image analysis, which provided the valid dates of Instagram posts that included flowers and plants. These dates were interpolated into a record that distinguished prevalent dates and seasons plant and flower species were in-bloom in Chrissiesmeer.

The Instagram tracking of the seasonal plant species in Chrissiesmeer provided data from eight years, with three years (2018, 2020, and 2021) that illustrate a similar pattern in posts. The general in-bloom phenophase of seasonal flowers in the Chrissiesmeer area range from mid-to-late September (20 September~) to early April annually (11 April~), with the remaining five years providing dates that lie within this period and the exception of one outlier. This was a trend that only emerged through the plant analysis, as opposed to the results of the animal

image analysis. This period coincides with the summer seasonal flower phenophases outlined by grassland characteristics. The pictures were predominantly provided by Instagram tags of Chrissiesmeer and Florence Guest Farm, posted by wedding guests and photographers. As such 20 September to 11 April will be the in-blossom time period, that will be compared to the rate of phenological advancement concluded by studies conducted in South Africa and globally. These rates of change outlined in Table 8 will be used to conduct the predictions of the future phenophases of seasonal flowers in Chrissiesmeer.

Table 8 Rates of phenological shifts for international and local plant and flower taxon.

Taxon	Paper	Rate of Pheno. Advancement (day/decade)	Locations of Study
International Literature			
All Plants	Parmesan and Yohe (2003)	2.3	Northern Hemisphere
All plants	Parmesan (2007)	2.8	Northern Hemisphere
All Plants	Root *et al.* (2003)	3.73 – 4.75	Northern Hemisphere
South Africa Literature			
Golden Delicious Apples	Grab and Craparo (2011)	4.2	Western Cape
Granny Smith Apple		2.8	
Jacarandas	Fitchett and Fani (2018)	2.38	Pretoria & Johannesburg
Namaqualand Daisies	Snyman and Fitchett (2022)	First flowering date: 2.6 Full boom: 2.1	Namaqualand

All of these rates of change (Table 9) illustrate the phenological shift that has occurred over time in each of the respective locations, concluded through a meta-analysis of extensive phenological datasets. These studies provide a projection for future phenological shifts of the plant taxon identified in each study, which can be used to predict the phenological shift of plant taxon that share similar characteristics, such as seasonality, species properties, and biome, or climatic zone. These rates of advancement were chosen to determine based on the similarities in seasonality, such as areas of high moisture availability (Fitchett and Fani, 2018).

Regarding each of the South African studies, these were chosen for the relation in location and similarity in the seasonal characteristics. The study conducted by Snyman and Fitchett (2022) on the Namaqualand daisies was chosen because of the presence of daisies in Chrissiesmeer (Table 5), despite slight differences in climate and elevation. The study conducted by Parmesan and Yohe (2003) and the re-adjusted study conducted by Parmesan (2007) included a rate of change based on the diverse widespread meta-analysis conducted on the phenology of 1700 species. Because these meta-analysis shares similarities with the diversity of the seasonal flower cluster in Chrissiesmeer, it will be added to the analysis of flower clusters in Chrissiesmeer. Similarly, this is likewise applicable to the rate of change provided by Root *et al.* (2003). Each rates of advancement was not linked to any changes in global and local temperature and provided the advancement rate in days per decade.

6.3.3.1. Phenological Advancement Rates of Chrissiesmeer Seasonal Flower Cluster

As detailed in Table 9, the future phenological rates of the Chrissiesmeer seasonal cluster (full bloom) show advancements that range from 5.88 days to 13.30 days in 2050, 11.13 to 25 days in the year 2075 and 16.38 to 37.05 days in 2100. These predicted phenophases show significant advancements as soon as 28 years in the future, an average of 6.71 days (a week) ahead of time and a little under half a month (13.30 days) with the more aggressive projection provided by Root *et al.* (2003). By the year 2100, this seasonal flower cluster could be in full bloom for an average of 18.68 days, when excluding Root *et al.'s* (2003) projection of 29.09 to 37.05 days in advance. This presents a drastic shift in seasonality and thus, the phenological

phases of summer seasonal flowers in Chrissiesmeer. These rates of change, which may vary, all show a change in the phenophases of flowers in the area.

Table 9 Future predictions of phenological shift for the seasonal flower clusters in Chrissiesmeer.

Venue	**Rate of Advance. (Day/DEC)**	**Phenophases Forecast (days; my days future season)**					
		2050		**2075**		**2100**	
Parmesan and Yohe (2003)	**2.3**	6.44	13 September – 4 April	12.19	7 September – 30 March	17.94	3 September – 25 March
Parmesan and Yohe (2007)	**2.8**	7,84	11 September – 3 April	14.84	5 September – 28 March	21.84	30 August – 21 March
Root *et al.* (2003)	**3.73 – 4.75**	10.44 – 13.30	(7 – 9 September) – (29 March - 1 April)	19.77 – 25,18	(1 September – 25 August) – (17 - 23 March)	29.09 – 37.05	(14 – 22 August) – (5 - 13 March)
Fitchett and Fani (2018)	**2.38**	6.66	13 September – 4 April	12.61	8 September – 30 March	18.56	2 September – 24 March
Synman and Fitchett (2022)	**Full bloom: 2.1**	5.88	14 September - 5 April	11.13	9 September – 31 March	16.38	4 September – 26 March

With the rising global climate, the final full bloom dates of the seasonal cluster phenophases could drastically change in the future. The rising global climate has contributed to the advancement of spring seasonal biological responses. However, rising global temperatures

delay autumn seasonal responses since temperatures are less likely to drop to the appropriate temperatures needed for autumn processes to occur in plant and animal species at the current pace (Cleland *et al.*, 2007; Inouye, 2022). Higher global and local temperatures affect climate variability and, thus, phenological processes are altered by the changes that occur in the atmosphere. This presents a potential problem for the lifecycles of plant and animal species, because of the encroachment of spring into late winter and summer into early autumn. The autumn and winter processes of plants and animals occur earlier or not at all in extreme conditions, should the plant and animal species not be able to adapt to the changing environment and climate. In animal phenology, earlier spring dates could offset key cold temperature phenological processes, which include changes in the process, location and timing of migration, or the laying and hatching process in bird species for an example most appropriate to this study (Inouye, 2022).

Thus, the *Matotoland* EcoTourism Association must consider these potential effects in the future and plan adequately to account for the shifts in phenology, specifically for events such as the Wildflower Day Festival. The language and marketing strategy used in Figure 12 can contribute to enticing tourists to feel a sense of security when planning a trip ahead of time to Chrissiesmeer to attend this event. However, with the consideration of shifting phenology and the rates of change and calculated predictions discussed here, it is becoming more apparent that the sustainability of flower-based festivals, events or tourist activities are at risk to the threat of climate change and shifting phenology. The Wildflower Day Festival may not “always be [held on] the third week of January”, which can be inferred for the Frog Night, Crane, and Flamingo Festivals alike.

6.4. Conclusion

The Chrissiesmeer's tourism industry faces challenges identified in the literature on small-town tourism, and throughout the COVID-19 pandemic, this study found that Chrissiesmeer is at a greater risk than expected of rural decline following the breakdown of this local economy. The small-town tourist operators struggled throughout the COVID-19 pandemic, either economically or with enforcing safety regulations, which resulted to the closure of some small businesses in Chrissiesmeer. Most respondents shared that they received little to no support from the local government during the pandemic and in the recovery period, following the height of the pandemic. This further exacerbated the broken-down relationships between tourism stakeholders and local government organisations, and with the already strenuous inter-stakeholder relations, the Chrissiesmeer industry stands the risk of jeopardizing the management of four of its key and most lucrative annual events in the future. With the imminent threat of climate change and shifting phenology, Chrissiesmeer's response to the COVID-19 pandemic is used as a proxy to understand how this small town is likely to respond to other large-scale stressors, such as climate and environmental change. Shifting phenology is projected to advance drastically from the year 2050 through to 2100. This shows that the confidence tourism operators have in the consistency of key historical phenology-based festivals is at risk. As the foundation and pillars of the Chrissiesmeer tourism sector and destination identity, the loss of these could cause dire impacts on the sustainability of the tourism sector, should these events fall victim to climate-related threats and shifting phenology. Thus, it is important that tourism operators and small businesses in Chrissiesmeer adequately prepare and adapt to these imminent threats, to maximise predictability and the sustainability of the key elements of the town's tourism sector.

7. Conclusion

7.1. Synthesis

Tourism is one of the fastest emerging industries in the world that has contributed substantially to the South African GDP for years (Kontsiwe and Visser, 2019; Friedrich *et al*., 2020). Tourism is an integral part of the South African economy and culture, at the national and local scale. This study aimed to explore climate- and phenology-related threats to tourism in Chrissiesmeer, through understanding the town's tourism sector and its reliance on climate and phenology, gauging the perceptions tourists and tourism operators held regarding climate-related threats to tourism, and lastly, assessing the predictability and sustainability of tourist activities and annual events at Chrissiesmeer. The town's adaptive capacity and sustainable practices were assessed to gauge how this small-town economy would likely respond to climate-related threats in the future. This response was examined by the effects the COVID-19 pandemic had on the Chrissiesmeer tourism sector, as a proxy of the extent to which large-scale stressors could impact the sustainability of local tourism economies.

This study was situated in the body of literature on niche tourism sectors that include events-based tourism, small-town tourism, nature- and phenology-based tourism, and wedding-based tourism. Niche tourism is a form of tourism that is based on "special interests, culture of activity-based tourism involving [a] small number of tourists in authentic settings" (Rogerson and Rogerson, 2021b, 1135). Thus, the practice of small-town tourism and events-based tourism can be described as niche forms of tourism. Small-town tourism is the development of tourism in rural areas and small communities and is often used to combat rural decline through revitalising these economies (Rogerson, 2002; Halseth and Meiklejohn,

2009; Kontsiwe and Visser, 2019). Events-based tourism is, likewise, a form of special-interest travel, where an event is the key point of interest and purpose for travel (Getz, 2008). Events are spatial-temporal occurrences and are optimised by adequate and effective event management and execution. Both forms of tourism only appeal to a particular group of tourists, which have particular preferences to visit rural areas as a holiday or hold a set of cultural beliefs or interests that encourage them to travel for an event. Often events-based tourism is used as a tool in developing small-town tourism, because the event is the main attraction and thus, small towns do not need to provide any tourist attractions of their own, outside of the event (Panyik *et al*., 2011; Rogerson and Rogerson, 2021a).

Secondly, the relationship between nature and society was further discussed to assess the importance of nature- and phenology-based tourism and the relationship society shared with natural environments, plants and animals. This section discussed how a relationship is formed through how tourists, directly and indirectly, interact with the natural environment, plant and animal species, and how these forms of tourism have the potential to increase environmental awareness need through a blend of education and recreation. Nature-based tourism is the use of natural environments and their ecosystems as the primary asset for tourist facilities, amenities and activities (Balmford *et al.,* 2009; Arneggar *et al.*, 2010; Buckley, 2012; Tao *et al.,* 2015). Phenology is the study of the biological responses of fauna and flora to seasonality (Sakurai *et al.*, 2011; Mahlangu and Fitchett, 2019), and what differentiates this form of tourism from nature-based tourism is the sensitivity to time and location. Phenology-based tourism presents any area with a robust ecosystem because biodiversity is location-specific and thus, this increases the competitive edge of that region (Roger and Donaldson, 2015; Kontsiwe and Visser, 2019; Mahlangu and Fitchett, 2019). It is this time and location-specific

advantage that connects nature-based tourism with events-based tourism. A connection that the town of Chrissiesmeer has benefited from throughout the years.

Lastly, literature on climate change was reviewed to determine the validity and potential threat shifting phenology could pose to the tourism sector at Chrissiesmeer. Climate change was the primary concern for tourism, following the COVID-19 global pandemic, because this pandemic showed the potential effects a super stressor will have on global and local tourism industries. Of the effects of climate change, rising global temperatures, increasing environmental degradation and extreme weather events are among the more notable threats to the tourism sector, which can have direct and indirect impacts. Higher temperature variation levels, extreme temperature highs and lows and extreme weather events include some of the more immediate and direct impacts on the tourism sector because of their effect on tourist comfortability levels (Fitchett *et al.*, 2016), while increasing global temperatures indirectly affect seasonality and thus, phenology (Mahlangu and Fitchett, 2019).

Chrissiesmeer, Mpumalanga, is both a protected wetland and grassland area, which is one of the only dually protected regions in the world (IUCN, 2022). The area is known as the Lake District of South Africa, as it is a key watershed area that has 270 lakes and pans in the region (Chrissiesmeer 2015). The watershed area is the start of major national rivers, which include the Vaal, Olifants, Mpuluzi, Usutu and Komati Rivers (Mpumalanga, 2019). As a grassland area, it is known for its shrubbery, vegetation-covered hilly landscapes and indigenous wildflowers that bloom in the country's summer season (Cadman *et al.,* 2013). Regarding the fauna, the Chrissiesmeer area is a well-known birding, fishing and frogging area, with diverse biodiversity, which includes wildlife and game. Chrissiesmeer is a small town nestled in a farming community, along the M17. It is located between two to three hours to the east of

Johannesburg and Pretoria, which has been favourable in making this scenic location a far emerging wedding venue destination. Apart from the town's natural appeal, Chrissiesmeer has an extensive historical and multi-cultural background spanning hundreds of years, with civilizations that include the San Bushman people, Bokoni, Swazi, Zulu, and European settlers, including English, Scottish and Afrikaner Boers (Sanders, 2016). With cultural sites from early African civilization, remnants of the Gold Rush, the Anglo-Boer War and Scottish settlement and expansion, this area is enriched with points of interest from the natural and the built environment.

This study undertook a mixed-methods approach that employed the use of both qualitative and quantitative data. The triangulation of results was the key tool used to integrate all forms of data collected to reveal common themes and patterns (Flick, 2004). The qualitative methods included key-informant semi-structured interviews, comprehensive tourist questionnaires, and online reviews analysis from TripAdvisor, Booking.com and SafariNow of Chrissiesmeer establishment profiles (O'Connor, 2010; Kontsiwe and Visser, 2019). The qualitative data was the image analysis of Instagram posts to compile a comparative contemporary phenological record (Fitchett and Fani, 2018), that was compared to pre-existing global and local phenological records to provide estimated predictions of future phenological patterns of the plant and animal species identified in the study.

The results section included the thematic analysis of all the data collected to determine common and recurrent themes in the data, while the discussion sought to situate the findings of this study within the body of literature that contextualised this research project. The findings of this study show a clear link between events-based, small-town, nature- and phenology-based tourism. The importance of nature-based festivals and events has

contributed to the identity Chrissiesmeer has built as a small-town destination and to the town's economy. Similarly, wedding tourism is a large contributor to the small town's economy, as the Chrissiesmeer area has become a fairly well-known wedding region, through the success of three major wedding venues in the area. Chrissiesmeer was acknowledged by tourists and tourism operators for the area's rich biodiversity, boasting a variety of some seemingly unique plant and animal species. These include flamingo and crane birds, as a part of an extensive list of bird species. The same can be said for frog, fish, and wildflower taxon alike. When considering that Chrissiesmeer is likewise a large agricultural area, which practices crop farming and animal grazing, a farm's authentic experience plays a role in creating a separation from urban living, for tourists who reside in urban spaces. This form of niche tourism banks solely on the Chrissiesmeer's rural and natural setting as the tourism product as a niche attraction. Similarly, climate plays a large role in the Chrissiesmeer tourism sector. The weather plays a large role in the success of the wedding sector and its ability to predict and adapt to possible weather changes effectively.

The multifaceted reliance the Chrissiesmeer tourism industry has on the natural environment, plant and animal species is of concern because of the imminent threat of climate change and shifting phenology. The relationship between events-based tourism and small-town reveals deep connections between the success of tourism in Chrissiesmeer and the events hosted in this area. Furthermore, nature- and phenology-based tourism and its relationship with events-based tourism were assessed to determine the vulnerability of Chrissiesmeer's phenology-based festivals to the effects of climate and environmental change. The perceptions that tourists and tourism operators hold regarding nature and climate change contributed to an assessment of the importance of nature in the Chrissiesmeer tourism sector

and how prepared small businesses are for climate-related threats. Furthermore, this allows an assessment of the predictability and the sustainability of nature- and phenology-based events in the future of the tourism sector.

Lastly, a future outlook for the phenological phases of the plant and animal species identified in this study was provided for the years 2050, 2075 and 2100, based on calculated predictions and literature, to determine the predictability of events and the overall sustainability of the tourism sector in Chrissiesmeer. This showed that shifting phenology would drastically change the phenophases and species availability of plant and animal species in Chrissiesmeer as soon as 2050. Thus, it is of great importance that the Chrissiesmeer tourism sector considers the potential and present effects of environmental and climate change because the majority of the most lucrative festivals, events and tourism activities are dependent on the phenological phases of certain plant and animal species (Sakurai *et al.,* 2011). With shifting phenology being the most sensitive and earliest response to increasing global temperatures, it is important that tourism operators and small businesses in Chrissiesmeer adequately prepare and adapt to these imminent effects, to maximise predictability and the sustainability of the key elements of the town's tourism sector (Dube and Nhamo, 2020).

7.2. Achievement of Study Aims

The study aimed to examine the climate and phenology-based threats to the Chrissiesmeer tourism sector. This sector will look at the objectives of this study and the efforts made in attempts to address each study objective.

1. To understand the current context of tourism at Chrissiesmeer and its reliance on climate and phonology.

To understand the current context of tourism at Chrissiesmeer, a variety of methodological approaches were employed. This included conducting key-informant semi-structured interviews with tourism operators, small business owners and managers in Chrissiesmeer, disseminating comprehensive tourist questionnaires to former tourists, and assessing the online reviews written by former tourists on TripAdvisor, Booking.com and SafariNow profiles of Chrissiesmeer establishments and using web content and pre-existing literature. Each one of these methodological approaches provided information on the landscape of tourism at Chrissiesmeer from a variety of different perspectives. Each tool provided information on the events and festivals held in Chrissiesmeer, the nature- and phenology-based tourism activities provided in the town and wedding tourism. The comprehensive tourist questionnaires and online reviews provided information about the experiences of former tourists in the area, including their travel motivations and their key destination points of interest. This also shared the concerns that tourists have with the current tourism sector at Chrissiesmeer and any potential future threats they are wary of for the future of the Chrissiesmeer tourism sector. Similarly, the key-informant interviews provided a widespread understanding of the reality of tourism operators in small-town tourist economies. This included the struggles and challenges these business owners face in trying to advance their businesses and Chrissiesmeer's tourism sector through marketing. A review of web and written literature provided the study with the origin of the Chrissiesmeer diverse tourism sector, through its nature-based tourism, cultural and historical context.

It was through an analysis of event-based tourism, small-town tourism, nature-based and wedding-based tourism which highlighted the nature and reliance of the tourism sector on the natural environment in the area. In particular, event-based tourism and nature-based tourism are deeply interconnected because four of the major annual events, which include The Frog Night, the Crane, the Flamingo and the Wildflower Day Festivals and all dependent on the phenophases of plant and animal species in Chrissiesmeer.

Chrissiesmeer has become a key destination for urban residents of Pretoria and Johannesburg for its rural farming community. Urban tourists travel to Chrissiesmeer as a means of experiencing a break and escape from urban spaces. The authenticity of the agricultural activity in the area contributes to the real farming-life experience and countryside living that most urban dwellers look for when visiting Chrissiesmeer.

Lastly, the natural environment, weather and climate are all key tourism products of their own. Weather and seasonality contribute a lot to determining which time of the year is more suitable for weddings for optimal weather and wedding scenery (with lakes, plans and rivers), which are the areas most preferred scenery for wedding pictures. The Chrissiesmeer tourism industry is dependent on the natural environment both directly and indirectly.

The Chrissiesmeer's tourism industry was assessed for any challenges it faces as a small town and throughout the COVID-19 pandemic. Both aspects of the tourism industry show problems that are in line with literature on small-town tourism experiences in South Africa. The tourism operators struggled under the COVID-19 regulations, which in some instances completely shut down and closed the doors of some small businesses in Chrissiesmeer. Apart from the social distancing regulations that were difficult to enforce, small-town businesses struggled

with the financial implications of the closure of businesses during lockdown periods. The majority of respondents shared that they received little to no support from local government, during the pandemic and in the recovery phase prior to the height of the COVID-19 pandemic. This further exacerbated the deteriorated relationships between tourism stakeholders and local government entities, and with the already strenuous inter-stakeholder relations, the Chrissiesmeer tourism industry stands the risk of jeopardising the management of four of its key and most lucrative annual events in the future. When adding the imminent threat of climate change and shifting phenology to the town's circumstances, Chrissiesmeer's response to the COVID-19 pandemic is used as a proxy to understand how this small town is likely to respond to other large-scale stressors, such as climate and environmental change.

2. To assist tourist and tourism operators' perceptions of climate-related threats to tourism

This objective was tackled through the use of key informant semi-structured interviews with tourism operators and comprehensive tourist questionnaires with former tourists of Chrissiesmeer. Through each of these qualitative methodological approaches, tourism operators and tourists of the area were asked about their thoughts on climate change and the potential threat climate change would oppose and the tourism sector increases me out. As the semi-structured interviews were open-ended, tourist operators were encouraged to share their thoughts freely, while former tourists were provided with a series of statements, they were able to respond to using a Likert five-point scale (Lee and Jan, 2015).

Of the two sample spaces, tourists appeared to be slightly more concerned about the effects of climate change as opposed to tourism operators. The majority of tourists mentioned that

they were to some degree informed about time a change and expressed a certain degree of concern about the potential impact climate and environmental change could have on the sustainability of the Chrissiesmeer tourism sector. A few of the tourism operators did express concern with climate change, with five out of the 11 respondents mentioning that climate change is indeed occurring and could potentially impact the natural environment in the area and thus their businesses. Of these respondents, if you believe that the solution to climate change is education at the individual level. Three of the respondents mentioned that they did believe climate change is occurring or is set to occur in the near future. However, all said that they believed that climate change was a part of the earth's natural process and a "cycle" they were not well informed about. Nonetheless, the majority of former tourists and tourism operators believe that the cause of climate change is a mixture of anthropogenic and the earth's natural processes, was anthropogenic processes exhilarating the process of the enhanced greenhouse effect, while the following group of tourist and tourism respondents opted to refrain from commenting on climate change.

3. To assess the predictability and sustainability of tourist activities and the annual events at Chrissiesmeer.

The key-informant interviews included questions that gauged each of the tourism operators' concern with the potential effects climate-related effects would have on the Chrissiesmeer tourism sector. Furthermore, in conjunction with their perceptions of climate change, each of the respondents was asked to comment on any potential climate-related threats the Chrissiesmeer tourism sector could face in the near future.

A comparative contemporary database was to create a phenological record for the species identified in the study. This contemporary dataset was compiled as a means of addressing a lack of phenological records that existed on the plant and animal taxa in the Chrissiesmeer area. This record provided seasonal patterns for in-bloom flowers and peak season fishing, with posts on birding, and hunting sharing some insight on the peak seasons of these activities in Chrissiesmeer. Through these phenological records, prediction dates/seasons were created using the rate of phenological advancement then international and local literature provided future seasons for the years 2050, 2075 and 2100. Each of these dates in the in-bloom flower production shows drastic changes in the phenological phases recorded through the study.

It was through the future predictions of the phenological phases of plant and animal species identified in this study that showed the threat of climate change and shifting for analogy and the tourism sector of Chrissiesmeer. This was assisted by a review of the eco-friendly and environmentally conscious practices small businesses had in place. Some of these practised were found to be the result of the current issues that these businesses face and small-town Chrissiesmeer, due to a lack of support and service provision from local government and the scarcity of resources, rather than an attempt to mitigate the effects of climate change. In closing, there is much room for growth in the adaptation and preparation strategies tourism businesses in Chrissiesmeer need to implement, to mitigate the effects of climate change and shifting phenology.

7.3. Limitations

One of the key limitations of the study was the sheer number of participants who responded to key-informant interviews and comprehensive tourist questionnaires.

Tourism operators were contacted virtually and telephonically before the upliftment of COVID-19 restrictions regulations, with little to no response through this medium. It was through two fieldwork trips conducted in March 2021 and September 2021 respectively, which increased the level of response through direct contact with potential participants. Another issue regarding the number of tourist operators' participants was the fact that single stakeholders often accounted for a variety of establishments canvassed in the study, which resulted in a far smaller sample space than expected at the start of the study. Furthermore, following the COVID-19 pandemic, a significant number of small businesses closed and, thus, these tourism operators were not available for participation.

Questionnaire response rates were low, despite the use of social media and the dissemination of posters in Chrissiesmeer itself. A generic post leading to the online questionnaire survey was posted on 20 to 30 Facebook groups and Chrissiesmeer tourism operator pages, including posts that were shared on LinkedIn and in personal WhatsApp groups through word-of-mouth. During each fieldwork trip, full scripts of the questionnaires were printed out to provide tourists in the area with the opportunity to fill one in. However, on both occasions, tourism visitation was low. Furthermore, 15 posters including a QR code Valid to the online questionnaire survey platform were placed around the town centre and at popular establishments in town. Tourism operators were informed of how the poster and QR code worked and consensually agreed to place posters at their establishments. One consideration for the lack of response could be the extent of the questionnaire which included quite a few questions. More concise questionnaires could have potentially affected the rate of response.

The number of online reviews available on TripAdvisor for a substantial analysis of the data was unfortunately low. This is because quite a few of the establishments identified in this

study were guest farms and, thus, did not appear as establishment profiles on TripAdvisor. The assistance of reviewing the same establishments on Booking.com and SafariNow contributed to the overall number of reviews. However, to receive a well-rounded holistic understanding of the experience of former Chrissiesmeer tourists and for clear trends and patterns to be identified through the dataset, the study would have benefited if the review count was higher.

A total of 279 online reviews were collected, 11 key-informant semi-structured interviews were conducted, and 12 comprehensive tourist questionnaires were answered.

7.4. Research Opportunities

Small-town revitalisation:

The rate of small-town decline in South Africa is increasing exponentially and particularly following the COVID-19 pandemic. However, there appears to be a gap in the literature that does not seek to address the revitalisation of small-town tourism, particularly through National policy and literature. Very few studies work to diagnose the potential causes of rural decline and then the solutions to these issues, which could involve and be addressed by stakeholders at a variety of different levels of the tourism industry.

Phenological Records and Prediction Tools:

There is a huge opportunity for South African phenological records to be conducted of a variety of plant and animal taxon, which would contribute to the adequate meta-analysis and

predictions of phenological records and the phenological shift experienced in South Africa. The need for phenological records made of data recorded over a period of 30 years and over has constantly been identified as a key opportunity in the field of climate change and phenological shift, particularly in the Southern Hemisphere.

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Appendices

Appendix A: Chrissiesmeer Business catalogue

Name of Business	TripAdvisor reviews
Miss Chrissie Country House B&B	39
Mc Cloud's	25 (Cottage)
	5 (breakfast Cafe)
John Jack Inn	(McClouds)
Lake Chrissie Lodge	1
Stasiemeester Museum	-
Lake View	-
Highveld Splendour Boutique Hotel (Ermelo)	152
Outside Inn and Innside Out B&B	-
Just Country	1
Frog Coffee Shop	8
King Edward Guest Accommodation	-
Sandsteen Kothuisies	-
Froggy B&B	-
Jail Bird	-
McCorkindale Cottage	-
Florence guest farm and wedding venue	24
Springgrove Estate	34
Holnek Nature Reserve **For**: Accom and Nature reserve tourist activities	-
Teen die Meer	-
BQ Lodge and Adventures	-
Gennesaret NG Church Camp Site	-
Dennedal Landgoed (Guest Farm)	-
SmitsField Farm	-
Birdwatching activities: Aretha Strydom	-
The Gin Shop at Florence	-
The Pink Flamingo	-

The Billiard Room Next to Jack John Inn	25
Hiking activities: Blue Wildebeest Hiking Trail	-
Randell's Ranch Tractor Museum	-
Frog Night/Padda Nag festival	
Wildflower Day (annual)	

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Appendix B: Key-informant semi-structure Interview Information Sheet



Good day,

My name is Mazozo Mahlangu and I am a Master's candidate at the University of the Witwatersrand, Johannesburg. I am a geographer, focusing my studies on tourism geography and environmental studies. I am conducting research on small-town tourism in South Africa, climate change and environmental studies, with a particular focus on Chrissiesmeer, a small town in Mpumalanga. This research project will be supervised by Professor Jennifer Fitchett of the School of Geography, Archaeology and Environmental Studies.

This study will look at tourism in Chrissiesmeer from the perspective of both tourists and tourism operators. As a part of this, this interview is designed to gauge the perspectives of tourism operators in Chrissiesmeer on tourist activities, events and facilities. AAs a part of this study, I kindly invite you to partake in an interview as a tourism operator in Chrissiesmeer. This will include exploring your experiences as a tourism official and your personal experiences as a member of the Chrissiesmeer community. Furthermore, this interview will gauge your opinions on climate and environmental change in connection to tourism at Chrissiesmeer. This interview will be approximately ±60 minutes long, either held telephonically or online through a video call, with notice and your permission. With your permission, I ask that the interview be recorded, either online via the online video conference platform or using a digital device, to ensure accuracy.

Outside of potentially acquiring access to the internet, there are no personal or financial costs to you should you participate in this study. Although you will not directly benefit from partaking in this study, your participation is highly appreciated! You will not be disadvantaged by choosing to participate in this study and there will be no penalty should you choose not to

partake in this study or choose to withdraw from the study at any time. Please note that the results of your questionnaire will be confidential will be protected throughout. All personal or identifying information will not be included in the final written-up dissertation and a pseudonym (false name) will be used instead. If you experience any discomfort at any point during this process, please feel free to withdraw from answering the questionnaire.

Please feel free to contact me or my supervisor, using the details stated below, should you have any further questions about the study. The results of this study will form a part of a full dissertation, which will be available on the University of the Witwatersrand online library website. Should you prefer to receive a summary of the thesis, please let me know as I'd be happy to provide you with a copy. The data collected for this study will be stored in password-protected hardware and will be kept for a maximum of three years, and thereafter, destroyed.

If you have any queries or concerns with the ethical conduct of this study, please feel free to contact the University Human Research Ethics Committee (Non-Medical) at +27(0) 11 717 1408 or hrecnon-medical@wits.ac.za.

Yours sincerely,

Mazozo Mahlangu

Researcher: Mazozo Mahlangu; (contact details).

Supervisor: Professor Jennifer Fitchett, (contact details).

Appendix C: Key-informant semi-structure Interview Consent Form

Events-based small-town tourism: Exploring the South African tourism sector under climate and environmental threats

Consent Form

Mazozo Mahlangu, as supervised by Professor Fitchett

I _____ (name and surname) consent to participate in this study and to participate in an interview as a part of it. I have been informed on the subject of this study and I am clear on my role in this study.

Please indicate with a tick, a cross or a circle.

I consent to remain anonymous throughout this study	Yes	No
I consent to the researcher using anonymous quotes in their dissertation	Yes	No
I consent to the interview being recorded	Yes	No
I consent to having the information I provided be used anonymously for academic purposes by other researchers, subject to their own approved ethics clearance.	Yes	No

_____ _____ _____

Participant*: Name and Surname* **Participant**: *Signature and Date*

_____ _____ _____

Researcher*: Name and Surname* **Researcher**: *Signature and Date*

Please fill in, scan and email to Mazozo Mahlangu at (contact details).

Appendix D: Key-informant semi-structure Interview Schedule

Tourism Operator Interview Schedule: Tourism at Chrissiesmeer

General Information

1. How long have you been open for operation in Chrissiesmeer?
2. Please describe the tourism products and/or services you offer.
3. If applicable, please give a brief definition of your premises/building.
4. Do you offer your products and services throughout the year or periodically/seasonally?
    a. If seasonally, please specify the timeframe?
5. When do you experience the most demand for your services?
    a. What makes this period your peak season?
6. What do you believe attracts tourists to your business?
7. What strategies do you use to attract tourists to your business?
    a. Of these strategies, which do you believe is the most effective?
8. What are the key aspects that are the basis for the products and services you provide?
    a. E.g. *vehicles for local tours, tour guides, flowers, kitchen equipment, etc*.
9. What general challenges are you currently facing?
10. Are there any future challenges you predict your business will face?
11. Are there any strategies you have in mind or in place that will help curb the effects of these future challenges?
12. How has the COVID-19 pandemic and national lockdown conditions affected your business?

Personal Experiences

13. Are you a permanent resident of Chrissiesmeer or do you commute in and out of the town?
    a. How long have you lived in Chrissiesmeer?
    b. How long have you worked in Chrissiesmeer?
14. Do you take holidays at establishments within Chrissiesmeer or engage in any of the tourist activities yourself?
15. Please mention the tourist activities you know off?
16. Which activities do you personally enjoy the most?
    a. What do you like most about each?
17. What makes Chrissiesmeer a special town, in your opinion?
18. What tourist activities would you like to preserve for future Chrissiesmeer tourists?
19. What other tourist activities would you like to incorporate into Chrissiesmeer tourism in the future?

Events-Based Tourism

1. Please tell me about any tourist events or festivals held in Chrissiesmeer you may know of?
2. Of the events and festivals you mentioned, which of these festivals occur annually?
    a. Would you say that these events/festivals have been consistent throughout the years?
    b. If not, please mention these changes?
    c. Of the events that you mentioned, do you believe these events will continue to occur five to ten years from now?

3. Do (or did you previously) host any tourist events or festivals in Chrissiesmeer?
    a. If you answer “yes”, please describe how the nature of your event(s) or festival(s).
        i. Time of year
        ii. Duration of event/festival
        iii. Location or a description of the setting
        iv. Activities/amenities
        v. General description of attendance/capacity
    b. Do you host this event/festival annually?
    c. If held annually, what do you believe is behind the success of your annual events?
    d. If not held annually, what were the reasons for hosting short term?
4. Please describe how your business is affected during these events and festivals?
    a. E.g. *is there a decrease or increase in sales/operation, destruction of property, or littering?*
5. As a member of the community, what events/festivals would you like to be held at Chrissiesmeer in the future?

Wedding Tourism

6. How popular are weddings in the Chrissiesmeer tourism sector?
7. Does your company host weddings?
8. Please describe some of the wedding-related products and services you provide.
9. What are your most busy months during the year?
    a. Why would you say these months are your busiest?

10. How does wedding visitation affect your business operation?

11. As a member of the community, did you get married in Chrissiesmeer?
    a. If “Yes”, what was the date of your wedding?
12. Was your wedding in Chrissiesmeer an indoor or outdoor wedding?
13. Where would you say the majority of your wedding photos were taken?
14. Have you attended a wedding at Chrissiesmeer?
    a. If “Yes”, which month did you attend the wedding?
15. Was the wedding you attended in Chrissiesmeer an indoor or outdoor wedding?

Small-town Tourism

16. Chrissiesmeer is a small town. What do you believe are the advantages of being a business owner in small-town tourist industries?
17. What are some challenges you face as a business owner in a small town?
18. What do you believe makes your company suitable for tourism in small-town?
19. What are the key efforts you made to fit your market and community in Chrissiesmeer?
20. On a larger scale, can you think of any advantages of small-town tourism for Chrissiesmeer?
21. What challenges do you think Chrissiesmeer, as a small town, faces in terms of tourism in South Africa?

Environmental and Climate Change Perceptions

22. On a scale of 1 to 10, how much of a role does nature plays in tourism at Chrissiesmeer?

23. What role does nature, plants and animals play in the operation of your business?
24. Have you experienced any issues with pollution in the area around your business or the areas you occupy for work?
25. What are your thoughts/observations on tourist activity and their consumption and waste practices in Chrissiesmeer?
26. Do you believe tourists should play a role in combating and mitigating climate change?
27. Has your business implemented any environmentally-friendly practices?
28. Does your business identify as an eco-tourism establishment?
29. In recent years, climate change has become a growing topic of interest and it has been projected to have effects on the environment. As a business owner, what are your thoughts on climate change?
30. Over your time in Chrissiesmeer, have you noticed any changes in the environment, climate, plant or animal life?
31. Have you noticed any changes over the years in any of your nature-based operations?
32. Do you believe climate change will affect tourism in Chrissiesmeer?
33. Do you have any concerns about climate change potentially affecting your business?
    a. If yes, please specify each concern in as much detail as possible.
    b. Have you considered placing any mitigation strategies in place to curb these potential effects or have any strategies currently in place?
34. Which role players should be leading the efforts to minimise and mitigate the effects of climate change?
    a. Global political organisations: e.g. IPCC/UNFCC
    b. National governments

c. Tourism industry/Industries

d. Businesses and companies

e. Tourists

f. Non-governmental organisations

g. Local communities

35. What do you believe is the best tool for combating climate change in the tourism industry?

Appendix E: Tourist Questionnaire Information Sheet and Online Layout

Tourism at Chrissiesmeer: Tourist Questionnaire

Good day,
My name is Mazozo Mahlangu and I am a Masters candidate at the University of the Witwatersrand, Johannesburg. I am a geographer, focusing my studies on tourism geography and environmental studies. I am conducting research on small-town tourism in South Africa, climate change and environmental studies, with a particular focus on Chrissiesmeer, a small town in Mpumalanga. This research project will be supervised by Professor Jennifer Fitchett of the School of Geography, Archaeology and Environmental Studies.
This study will look at tourism in Chrissiesmeer from the perspective of both tourists and tourism operators. As a part of the study, this questionnaire is designed to gage the perspectives of former tourists on the subject of tourist activities, events and facilities in Chrissiesmeer and your opinions on small-town tourism in South Africa, environmental aspects and climate change.

As a part of this research project, I kindly invite you to fill out a questionnaire as a former tourist and resident of Chrissiesmeer. The questionnaire will be available through an online survey platform (link to be attached) and will take you approximately 20-30 minutes to complete. Outside of acquiring access to the internet, there are no personal or financial costs to you should you participate in this study. Although you will not directly benefit from partaking in this study, your participation is highly appreciated! You will not be disadvantaged by choosing to participate in this study and there will be no penalty should you choose not to partake in this study or choose to withdraw from the study at any time. Please note that the results of your questionnaire will be confidential and your anonymity will be protected throughout, as no personal or identifying information will be collected. If you experience any discomfort at any point during this process, please feel free to withdraw from answering the questionnaire.

Please feel free to contact myself or my supervisor, using the details stated below, should you have any further questions about the study. The results of this study will form a part of a full dissertation, which will be available on the University of the Witwatersrand online library website. Should you prefer to receive a summary of the thesis, please let me know as I'd be happy to provide you with a copy. The data collected for this study will be stored in password-protected hardware and will be kept for a maximum of three years, and thereafter, destroyed. If you have any queries or concerns with the ethical conduct of this study, please feel free to contact the University Human Research Ethics Committee (Non-Medical) at +27(0) 11 717 1408 or hrecnon-medical@wits.ac.za.

Yours sincerely,
Mazozo Mahlangu
Researcher: Mazozo Mahlangu; 1085987@students.wits.ac.za, 074 868 5775.
Supervisor: Professor Jennifer Fitchett, Jennifer.fitchett@wits.ac.za, 011 717 6514.

* Required

Skip to question 1Skip to question 1

Demographics

1. How old are you? *

Mark only one oval.

- ◯ 18 - 24
- ◯ 25 - 39
- ◯ 40 - 60
- ◯ 60 plus

2. Which gender do you identify with? *

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Other

3. Which country do you live in? If in South Africa, please specify which province. *

_____

4. What is your highest level of education? *

Mark only one oval.

- ◯ Primary School
- ◯ Secondary School
- ◯ Undergraduate Degree/Higher Education Diploma/Cerificate
- ◯ Four-year Degree/Honours
- ◯ Postgraduate Degree

Visitation Patterns

5. How many times have you visited Chrissiesmeer? *

Mark only one oval.

- ◯ Once
- ◯ 2 - 3 times
- ◯ 4 or more times

6. When you visit Chrissiesmeer, how long do you stay in the town? *

Mark only one oval.

- ◯ 1 - 2 days during the week
- ◯ For a weekend
- ◯ 3 - 7 days
- ◯ 1 - 3 weeks
- ◯ For a month or more

7. When did you/do you usually visit Chrissiesmeer? *

Mark only one oval.

- ◯ Summer: December, January, February.
- ◯ Autumn: March, April, May
- ◯ Winter: June, July, August
- ◯ Spring: September, October, November

8. How far ahead did you plan your visit to Chrissiesmeer? *

Mark only one oval.

- ◯ A few days before arrival
- ◯ 1 – 3 weeks before arrival
- ◯ A month before arrival
- ◯ 1 – 6 months before arrival
- ◯ 6 or more months before arrival

9. Where were you travelling from to get to Chrissiesmeer? From a/an: *

Mark only one oval.

- ◯ Neighbouring town
- ◯ Neighbouring province (Limpopo, Gauteng, KwaZulu-Natal)
- ◯ Another province in South Africa
- ◯ Country in Southern Africa region
- ◯ Other country in Africa
- ◯ Overseas country

10. Who do you usually travel with to Chrissiesmeer? *

Mark only one oval.

- ◯ Alone
- ◯ With friends
- ◯ As a family (including children)
- ◯ As a family (excluding children)
- ◯ With colleagues on business
- ◯ Other: _____

11. Which modes of transport did you use to get to Chrissiesmeer? *

Check all that apply.

- ☐ Private transport (drove with personal/hired car)
- ☐ Private transport (motorbikes, adventure bikes)
- ☐ Local public transport (used a bus/taxi/domestic flight)
- ☐ International flight

12. What were your reasons to visit Chrissiesmeer? Please tick all the appropriate options: *

Check all that apply.

- ☐ To visit family
- ☐ For the scenery
- ☐ Lake tour/viewing
- ☐ Good weather
- ☐ Bird-watching activities
- ☐ Frog-Night Festival
- ☐ Wildflower season/tours
- ☐ Museum/Historical tourism
- ☐ Craft Liquor Festival/Other social festival
- ☐ For a wedding
- ☐ Fishing
- ☐ Camping
- ☐ Marathon/Fun walk
- ☐ Adventure biking
- ☐ Overall experience

Other: ☐ _____

13. Please select the most accurate response to this statement: “I was aware Chrissiesmeer offered all the above-mentioned tourist activities.” *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

14. “I would re-visit Chrissiesmeer in the future.” *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

COVID-19 Pandemic

15. Did you have to cancel a pre-planned trip due to COVID-19 pandemic/National lockdown? *

Mark only one oval.

- ◯ Yes
- ◯ No

16. Has the COVID-19 pandemic increased or decreased your confidence in travelling during the Level 1 lock-down period? *

Mark only one oval.

- ◯ Strongly increased
- ◯ Slightly increased
- ◯ Neutral
- ◯ Slightly decreased
- ◯ Strongly decreased

17. "I would travel to Chrissiesmeer during the Level 1 Lockdown period" *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

18. If you agreed with the statement above, what would you visit Chrissiesmeer for: *

Check all that apply.

- ☐ To visit family
- ☐ For the scenery
- ☐ Lakes tours/viewing
- ☐ Good weather
- ☐ Bird-watching activities
- ☐ Frog-Night festival
- ☐ Wildflower season/tours
- ☐ Craft Liquor Festival/Other social festivals
- ☐ Museum/Historical tourism
- ☐ For a wedding
- ☐ Camping
- ☐ Fishing
- ☐ Marathon/Fun walk
- ☐ Adventure biking
- ☐ Overall experience
- ☐ Not applicable

Other: ☐ _____

Role of Nature

19. In your opinion, what is the most memorable feature of Chrissiesmeer? *

_____

_____

_____

_____

_____

20. When you were in Chrissiesmeer, did you visit a farm, lakes/pans or any natural environments? *

Mark only one oval.

- ◯ Yes
- ◯ No

21. Did you visit Chrissiesmeer particularly to engage in their nature-based tourist activities, such as camping, fishing, wildflower or lake touring, frog-night festival? *

Mark only one oval.

- ◯ Yes
- ◯ No

22. On a scale of 1 to 10, how important is nature or natural environments to you when planning a trip? (e.g. greenery, gardens, veld, beaches, and natural water sources) *

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Not important at all	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Very important

23. On a scale of 1 to 10, how much do you enjoy seeing and interacting with animals when you are on holiday? *

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Not important at all	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Very important

24. "I am more likely to visit a destination with natural appeal, rather than a destination in the city for a holiday" *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

Small-Town Tourism

25. Did Chrissiesmeer being a small-town factor into the planning of your trip? *

Mark only one oval.

- ◯ Yes
- ◯ No

26. How often do you travel to small-towns for a holiday or a sho't-left? *

Mark only one oval.

- ◯ Not often
- ◯ Once every few years
- ◯ Once a year
- ◯ 2 -3 times a year
- ◯ 4 or more times a year

Events-Based Tourism

27. Have you ever planned a trip around a festival, concert or an event? *

Mark only one oval.

- ◯ Yes
- ◯ No

28. How often do you travel to a destination for a festival, concert or an event? *

Mark only one oval.

- ◯ Not often
- ◯ Once every few years
- ◯ Once a year
- ◯ 2 -3 times a year
- ◯ 4 or more times a year

29. Did you travel to Chrissiesmeer primarily for any of their events? If so, which events? *

Check all that apply.

- ☐ Frog Night Festival
- ☐ Lake Chrissie Craft Liquor Festival
- ☐ A fun-run/marathon event
- ☐ Crane Festival
- ☐ For a wedding
- ☐ Wildflower season
- ☐ Bird-watching season
- ☐ Not applicable
- Other: ☐ _____

Climate Change and Environmental Observations and Perspectives

30. "I take my potential carbon emissions into consideration when planning a trip" *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral/Not considered
- ◯ Disagree
- ◯ Strongly disagree

31. How important do you think it is to consider your carbon footprint when travelling? *

Mark only one oval.

- ◯ Very important
- ◯ Important
- ◯ Less important
- ◯ Not important at all
- ◯ Not considered

32. Please identify any reasons you would cancel a holiday or trip: *

Check all that apply.

- ☐ Extreme weather events (e.g. floods, super storms, veld fires)
- ☐ Disease outbreak (e.g. COVID-19)
- ☐ Weather disparities (e.g. incredibly high or low temperatures, high winds/humidity)
- ☐ Safety hazards/Political unrest (e.g. terrorism risk, crime)
- ☐ Failing infrastructure (e.g. dilapidated roads, buildings, public resources)
- ☐ High costs (e.g. transport, accom. costs)

Other: ☐ _____

33. Please identify any reasons you would lengthen a trip or holiday: *

Check all that apply.

- ☐ Good weather
- ☐ Variety of tourist activities/amenities
- ☐ To explore a destination
- ☐ Explore destination after festival, event or wedding
- ☐ Engage with the community
- ☐ Volunteer at a community/Eco-project
- ☐ Extend a family visit

Other: ☐ _____

34. Please choose the most accurate response to the following statements: “When I was in Chrissiesmeer, I did not notice any air pollution.” *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

35. “When I visited lakes/pans, I did not notice any water pollution.” *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

36. “When I was in Chrissiesmeer, I did not notice any issues with littering or waste disposal.” *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

37. “Upon revisiting Chrissiesmeer around the same time/season over time, I have noticed some changes in temperature in the area.” *

Mark only one oval.

- ◯ Apparent decrease in temperatures
- ◯ Slight decrease in temperatures
- ◯ No change
- ◯ Slight increase in temperatures
- ◯ Apparent increase in temperatures
- ◯ Not applicable

38. “Upon revisiting Chrissiesmeer over time, I have noticed some changes in the plant and flower population in the area.” *

Mark only one oval.

- ◯ Apparent decrease in plant population density
- ◯ Slight decrease in plant population density
- ◯ No change
- ◯ Slight increase in plant population density
- ◯ Apparent increase in plant population density
- ◯ Not applicable

39. “Upon revisiting Chrissiesmeer over time, I have noticed some changes in the animal population in the area.” *

Mark only one oval.

- ◯ Apparent decrease in animal population density
- ◯ Slight decrease in animal population density
- ◯ No changes
- ◯ Slight increase in animal population density
- ◯ Apparent increase in animal population density
- ◯ Not applicable

40. What do you think are the driving forces behind climate change? *

Mark only one oval.

- ◯ Human activity
- ◯ Natural processes
- ◯ Both equally
- ◯ Both - more by human activity
- ◯ Both - more by natural processes
- ◯ I don't know
- ◯ Not considered

41. When do you think the effects of climate change will present themselves? *

Mark only one oval.

- ◯ The effects are already apparent
- ◯ In the near future (5 - 30 years)
- ◯ Farther in the future (50 - 100 years)
- ◯ There will not be any effects
- ◯ Other: _____

42. "I believe climate change will have an affect on tourism in Chrissiesmeer in the future." *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree
- ◯ I'm not sure

43. Which role players should be leading the efforts to minimise and mitigate the effects of climate change? *

Mark only one oval.

- ◯ Global political organisations: e.g. IPCC/UNFCC
- ◯ National governments
- ◯ Tourism industry/Industries
- ◯ Tourists
- ◯ Non-governmental organisations
- ◯ Local communities

44. Do you believe that tourists have a role to play in combating and mitigating climate change? *

Mark only one oval.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree
- ◯ I'm not sure what tourists can do to contribute

45. What do you believe is the best tool for combating climate change on a large scale? *

Mark only one oval.

- ◯ Education/Knowledge
- ◯ Political will/aptness
- ◯ Community engagement
- ◯ Widespread individual effort
- ◯ Corporate/business responsibility
- ◯ Other: _____

Lastly, Any other thoughts...

Appendix F: Human Resources Ethics Committee (Non-Medical) Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Mahlangu

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H20/09/22**
PROJECT TITLE	Events-based small-town tourism: Exploring the South African tourism sector under environmental and climate challenges
INVESTIGATOR(S)	Ms M Mahlangu
SCHOOL/DEPARTMENT	Geography, Archaeology and Environmental Studies/
DATE CONSIDERED	18 September 2020
DECISION OF THE COMMITTEE	Approved Risk Level: Minimal
EXPIRY DATE	09 November 2023

DATE 10 November 2020 **CHAIRPERSON** (Professor J Knight)

cc: Supervisor : Professor J Fitchett

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

Signature Date 13 / 11 / 2020

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES