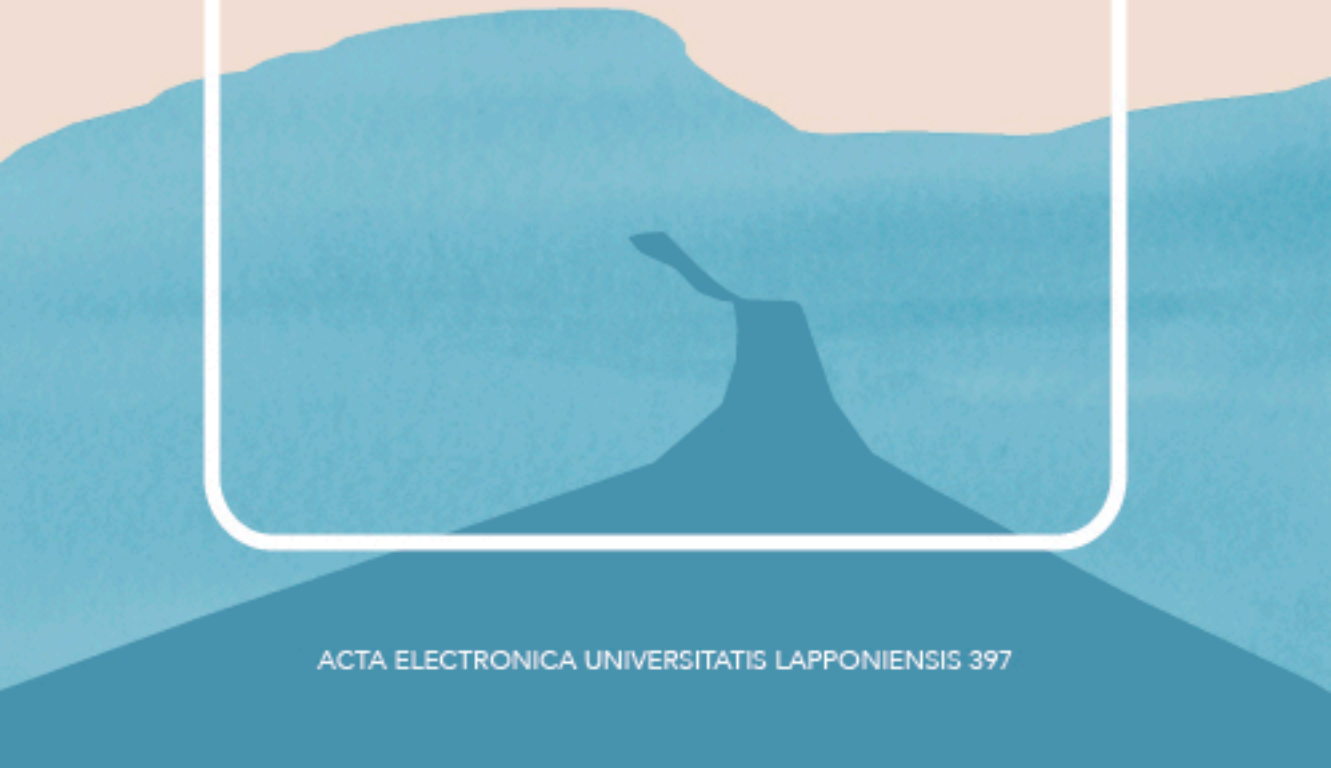
Elina Hutton

OUTDOORS GOES ONLINE

Tourist gaze in social media
for visitor monitoring and management



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ELINA HUTTON

OUTDOORS GOES ONLINE

Tourist gaze in social media for visitor monitoring and management

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Dedicated to my godchildren Siiri, Mimmi, Perttu, and Leo, and to my nieces and nephews Otto, Aatu, Sinna, Siru, Mauno, Martin, and Pihla.

Abstract

Visual representations of destinations have always inspired travellers. Commissioned paintings were employed to promote the allure of untouched nature, challenging earlier perceptions of perilous wilderness. Staged photographs, postcards, and popular media served similar promotional purposes. However, the advent of social media has brought about a significant shift. It's no longer just about sharing holiday snapshots with friends back home. Through global social media platforms, visitors inspire others about where to visit and what to see. This shift from traditional media to user-generated content means that social media users now have an impact on the tourist gaze outside government policies, environmental planning, or visitor management control.

At the same time, managers of protected recreational areas have faced the challenge of meeting the needs of increased outdoor recreation and visitations to protected areas while safeguarding their ecological integrity. The increasing influence of social media as travel inspiration highlights the need for a better understanding of how social media impacts visitors and its potential contributions to visitor management.

In this study, I explored how social media impacts visitors gaze in protected nature recreational areas, using the example of Kilpisjärvi and the Käsivarsi Wilderness Area in northwestern Finnish Lapland. The research question is divided into three sub-questions: 1) What is posted on social media about visits to Kilpisjärvi and the Käsivarsi Wilderness Area? 2) How does this content reinforce or challenge existing perceptions of nature? 3) What insights do social media and Big Data information-gathering methods offer for visitor monitoring?

I situated these research questions within the theoretical framework of the cultural construct of nature. To provide a longitudinal perspective on how our perception of nature is shaped by cultural and social influences, I explored the role of visual arts in wilderness discourses from the Romantic era to the present social media age. Next, I studied social media as a platform reflecting the tourist gaze: it is where the visitors share visual narratives, shaping the interpretation of landscapes and co-creating destination imagery. This characteristic of social media has allowed for several quantitative and qualitative visitor monitoring studies in the last years.

The social media data, which was collected in 2019, consists of images that underwent analysis using both a computer vision programme for image analysis and manual categorisation techniques. Textual data was manually classified. I reflect on the consequent quantitative data with netnographic observations and ultimately use

spatial analysis to overlay the social media data onto the geological, political, and environmental context of Kilpisjärvi.

This study reveals that visitors' social media posts from Kilpisjärvi often perpetuate colonialist and romanticised imagery of wilderness landscapes. Large open landscapes dominate the selected content, while images depicting individual elements of ecological nature or local everyday life and cultures are relatively few. Social media demonstrates a strong feeling of community, which strengthens, at unprecedented speed, the power of its impact on the tourist gaze, framing nature into sharable images. These results suggest that social media guides visitors to nature destinations primarily to admire landscapes, often overlooking ecological aspects. This tendency may foster a superficial relationship with nature. Furthermore, social media propagates a colonial discourse by marginalizing local and indigenous cultures, rendering them invisible within the landscapes depicted.

This study contributes to the evolving research field by providing further evidence of the usability and limitations of social media data for visitor monitoring. Additionally, it advances qualitative interpretations of spatial and quantitative social media data through novel use of viewshed analysis to study visitor preferences. Finally, I have addressed the challenge for visitor management to balance the social media's benefits in promoting destinations with its potential to shape the tourist gaze and limited representations of nature through shareable images.

Key words: nature tourism, social media, tourist gaze, visitor monitoring and management, wilderness, geographic information system

Tiivistelmä

Matkakohteiden visuaaliset esitykset ovat aina inspiroineet matkailijoita. Tilaustaiteena tehdyt maalaukset esittelivät koskemattoman luonnon houkuttelevuutta ja haastoivat aikaisempia käsityksiä vaarallisesta erämaasta. Lavastetut valokuvat, postikortit ja populaaritaide jatkoivat samaa mielikuvan rakentamista. Sosiaalisen median nousu on kuitenkin tarkoittanut merkittäviä muutoksia. Kyse ei ole pelkästään lomakuvien jakamisesta ystäville kotona. Globaaleilla sosiaalisen median alustoilla kävijät inspiroivat muita kertomalla minne matkustaa ja mitä nähdä siellä. Tämä siirtymä perinteisistä medioista käyttäjien tuottamaan sisältöön mahdollistaa sen, että sosiaalisen median käyttäjät vaikuttavat nykyään turistiseen katseeseen ohi hallitusten politiikan, ympäristösuunnittelun tai kävijähallinnan.

Samaan aikaan suojeltujen virkistysalueiden hallinnoijat pyrkivät vastaamaan lisääntyvän ulkoilun ja kasvavien käyntimäärien tarpeisiin suojelluilla alueilla ja samalla turvaamaan niiden ekologinen eheys. Sosiaalisen median kasvava vaikutus matkainspiraation lähteenä korostaa tarvetta ymmärtää paremmin, miten sosiaalinen media vaikuttaa kävijöihin ja sen potentiaalista käyttöä kävijähallinnan työkaluna.

Tässä tutkimuksessa tutkin, miten sosiaalinen media vaikuttaa turistin katseeseen suojelluilla luontovirkistysalueilla käyttäen esimerkkinä Kilpisjärveä ja Käsivarren erämaa-aluetta Luoteis-Lapissa. Tutkimuskysymys jakautuu kolmeen osakysymykseen: 1) Mitä Kilpisjärvestä ja Käsivarren erämaa-alueesta julkaistaan sosiaalisessa mediassa? 2) Miten tämä sisältö vahvistaa tai haastaa olemassa olevia luontokäsityksiä? 3) Mitä sosiaalinen media ja Big Data -informaatiokeruumenetelmät tarjoavat kävijäseurannalle?

Tutkimuskysymykset asettuvat luonnon kulttuurisen konstruktion teoreettiseen viitekehykseen. Tarjotakseni pitkittäisen näkökulman siihen, miten kulttuuriset ja sosiaaliset vaikutteet muokkaavat luontokäsitystämme, tarkastelin visuaalisten taiteiden roolia erämaakeskusteluissa romantiikan aikakaudelta nykyiseen sosiaalisen median aikakauteen. Seuraavaksi tutkin sosiaalista mediaa alustana, joka heijastaa turistin katsetta: se on alusta, jossa kävijät jakavat visuaalisia narratiiveja, muovaavat maisemien tulkintaa ja luovat yhdessä matkakohdekuvastoa. Tämä sosiaalisen median ominaisuus on mahdollistanut useita määrällisiä ja laadullisia kävijäseurantatutkimuksia viime vuosina.

Vuonna 2019 kerätty sosiaalisen median data koostuu kuvista, joita analysoitiin sekä kuvantunnistukseen perustuvan konenäön että manuaalisen luokittelun avulla.

Tekstipohjainen data luokiteltiin manuaalisesti. Analysoin määrällistä dataa myös netnografisten havaintojen valossa ja hyödynnän lopuksi paikkatietoanalyysiä sijoittaakseni sosiaalisen median datan Kilpisjärven geologiseen, poliittiseen ja luonnontieteelliseen kontekstiin.

Tutkimukseni osoittaa, että Kilpisjärvestä julkaistut sosiaalisen median postaukset ylläpitävät kolonialistista ja romantisoitua kuvastoa erämaamaisemista. Laajat avoimet maisemat hallitsevat jaettua sisältöä, kun taas kuvia ekologisen luonnon yksittäisistä elementeistä tai paikallisesta arjesta ja kulttuurista on vähän. Sosiaalinen media osoittaa vahvaa yhteisöllisyyden tunnetta, joka ennennäkemättömällä nopeudella lisää sen vaikutusta turistin katseeseen ja kehystää luonnon jaettaviksi kuviksi. Tulokset viittaavat siihen, että sosiaalinen media ohjaa kävijöitä luontokohteisiin ihailemaan pääasiassa maisemia, mutta ekologiset näkökulmat jäävät usein huomiotta. Tämä voi edistää pinnallista suhdetta luontoon. Lisäksi sosiaalinen media välittää kolonialistista diskurssia marginalisoimalla paikalliset ja alkuperäiskulttuurit, tehden niistä maisemissa näkymättömiä.

Tutkimus edistää kehittyvää tutkimusalaa tarjoamalla uutta näyttöä sosiaalisen median datan käytettävyydestä ja rajoitteista kävijäseurannassa. Lisäksi se syventää paikkatietoanalyysin ja määrällisen sosiaalisen median datan laadullisia tulkintoja hyödyntämällä näkyvyysanalyysiä kävijöiden mieltymysten tutkimiseen. Lopuksi olen käsitellyt kävijähallinnan haastetta tasapainottaa sosiaalisen median hyödyt matkakohteiden markkinoinnissa sen mahdollisten vaikutusten kanssa, jotka liittyvät turistin katseen muotoutumiseen ja luonnon yksipuoliseen esittämiseen jaettavina kuvina.

Avainsanat: luontomatkailu, sosiaalinen media, turistin katse, kävijäseuranta, kävijähallinta, erämaa, paikkatietojärjestelmä

Preface and acknowledgements

In these times we call post-digital, post-human, and post-Anthropocene, we cry for lost nature, and we fight to stop the last old trees from being logged to feed the factories of the multinational corporations while we watch the news of the polar ice melting. In soul- and spirit-searching quests into the wilderness we call untouched, we claim to find and re-connect with the human within us by returning to the nature we abandoned in the rush to develop the world we no longer like. Having found the peace and beauty of such a place, conquering its wilderness and high peaks, taken by the urge to share these soul-trembling experiences of encounters with the unfamiliar, we pluck wildflowers, use toxic vapours to protect ourselves from mosquitoes, and leave behind trails of toilet paper, food wrappings, and exposed tree roots and rocks under the ever-growing pressure of our footprints.

In this fast-paced and ever-changing world where the instant online sharing of experiences in the outdoors not only changes the experience itself but also enables peer-to-peer information exchange in a way that was unknown only a decade ago, visitor monitoring and the management of protected nature tourism destinations need new tools to keep up with online word-of-mouth. Such innovation is important for local-level nature use management, but on a global scale we likewise need methods through which to comprehend how the most fragile aspects of nature are present in the largest media spheres of our days.

We only protect what we see: the last remaining old trees, the ice under the polar bear, that one flower we took a photo of. To protect entire ecosystems or biodiversity, we need to make them visible, and what would be a better opportunity to acquaint ourselves with nature than nature tourism and outdoor recreation, both rapidly growing by any measure?

Kilpisjärvi, which I use as the case for this study, is a remote village in the northwest corner of Finland, nestled between protected, tundra-like fells and mountains behind the state borders of Sweden and Norway. The last 200 kilometres of narrow road leading to Kilpisjärvi is mostly in poor condition; with barely any settlements along the winding opening, it cuts through the low-growing mountain birch forests. Rather than intimidating visitors, the road seems to build up the excitement of the arrival to Kilpisjärvi. The first picture published on social media is often taken from the car at the exact moment when the magnificent Saana fell behind the village becomes visible: the home rock for some 150 locals and the bucket-list destination for the rest. Social media, with all its variations, is an important channel for regional tourism marketing, as well as for peer-to-peer communication and recommendations.

In summer 2018, when I started to formulate the present research plan, there were more posts on Instagram tagged #saana, the iconic and best-known Finnish fell in Kilpisjärvi, than that featured some of the popular sights in the Finnish capital city Helsinki.

Kilpisjärvi village and the surrounding protected areas have a complex status in Finland. As the only mountainous region in Finland, it has a special place in the Finnish nature tourism scene, and the region's unique natural values make it internationally interesting for natural scientists and environmental researchers. The region is part of the Sami homeland; thus, traditional Sami reindeer husbandry has both cultural and legal implications for land use in the region. I have worked in Kilpisjärvi in tourism industry development and marketing, as well as with applied natural sciences and nature protection, since 2011.

This Ph.D. study was born out of concern about the invisibility of the place where I was taught to appreciate lichen and invertebrates, tiny flowers, under-soil fungus and bacteria, birds, and fish without asking what their role in, meaning for, or relation to my life is. I had travelled the world, stood above the clouds on mountain peaks, hiked in rainforests, and swam with sharks in an ocean, but I had never felt as touched as I did when I saw a tardigrade found in my home fells through a microscope.

Finally, I want to take this opportunity to thank the people without whom this dissertation would not have been possible. First, I thank my four supervisors for sharing their academic knowledge and insights of the research processes and academic world. I want to acknowledge Professor Outi Rantala for her academic mentorship and endless patience during my many moments of doubt and stress. Her calm manner of handling any issues risen during this process has been most valuable and inspiring. I am thankful to Professor Anne Tolvanen, who encouraged me to write the first research proposal and contributed to the multidisciplinarity of the work by providing a natural scientist viewpoint to the work. I want to thank Professor Seija Tuulentie for sharing her experience of research in the Kilpisjärvi region, and her encouragement and support during these years, and, of course, for introducing me to Professor Rantala and convincing me that tourism research was indeed my field. My thanks to university lecturer Marianne Silén for the fun we had with the quantitative analyses, it is rare to find researchers who share the passion for numbered data in our field.

I am grateful to the preliminary examiners professors Rannveig Ólafsdóttir and Tuuli Toivonen for their valuable advice and suggestions, which greatly improved this text. Their knowledge and comments especially on the methods section provided critical insights that strengthened the methodology and enriched the study's findings and discussions.

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I also acknowledge those who inspired and encouraged me along the way: all my colleagues, excellent teachers, and administrative staff at the University of Lapland Social Sciences Department and doctorate school; the researchers at the UArctic Network; the staff and researchers at Helsinki University Kilpisjärvi Biological Research Station, who inspired me to take this path, among them the bioartist who introduced me to the tardigrade; and my colleagues who made the initial research process possible and introduced me with visitor management practises in the Halti Interreg Project—Rune Benonisen, Odd Rudberg, Asgeir Blixgård, Gaute Svenson, Arvid Viken, Pentti Itkonen, Seija Tuulentie, and, of course, Ari Nikula—who sparked my interest in GIS. My gratitude extends to Metsähallitus Parks and Wildlife Finland staff throughout Lapland for their support and inspiration, not forgetting my colleagues at SALT Lofoten, who have supported the last two years of the Ph.D. journey with encouragement, peer support, and possibility to take a long leave of absence to finish the work. The leave of absent was possible with the financial support from the Esko Riepula grant, to which I am grateful.

Finally, I want to thank my family and friends. My mum Arja for giving me the gift of reading, imagination, and love for learning. My dad Erkki for taking me to Kilpisjärvi to snowmobile in 2007. My aunts, Annikki and Kaarina, who introduced me to art—without their influence this work would have taken a very different shape. I want to express my appreciation and gratitude for my husband, Gareth, who endured endless discussions about social media and kindly took on all household responsibilities when I was absorbed in writing. I want to thank Riikka Holopainen for lending me those books, which I will finally be able to return. I want to thank my parents with their spouses, my in-laws, my siblings, and other close family and friends, who never doubted that I would finish even when I told them I had decided to give up—you believing in me has meant everything. I want to thank artist Sirpa Alalääkkölä for allowing me to work on the finishing touches of the text at her beautiful home in New Zealand. And my grandmother, whom I wish could be here today.

Finally, I want to express my gratitude to all those individuals who have posted their meaningful moments on social media, I hope I have done justice to your thoughts.

As you are approaching Kilpisjärvi from the south, the long drive is rewarded by the views opening over the lake Kilpisjärvi. The recognizable shape of the Magnificent Saana, as it is often referred to in Finland, stands at the back left of the image. Image: Elina Hutton.

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1 Introduction

1.1 Social media use in the outdoors adds to the need for new visitor monitoring methods

In this study, I explore the intricate relationship between two parallel trends: the growing interest in nature destinations and the simultaneous rise of social media as a source of travel inspiration and a community hub for like-minded individuals. I aim to explore the implications of social media's growing influence on visitors and, consequently, visitor monitoring and management in protected nature recreational areas. National parks and wilderness areas are balancing the duty to invite visitors to enjoy nature with safeguarding it from the impacts of human activity. This dual mandate poses a complex challenge, and understanding the role of social media in shaping visitor behaviour is crucial to addressing this challenge effectively.

My research focuses on this global challenge within the context of a local case study: the Kilpisjärvi tourism resort in northwestern Finland. Nestled amidst sub-arctic landscapes and unique flora and fauna, Kilpisjärvi stands out as a popular tourism destination in Finland. However, even before the onset of tourism, the region hosted internationally renowned research from natural scientists. Land use management is legally mandated there to safeguard traditional Sami reindeer husbandry in the wilderness area and to preserve natural values in several strictly protected conservation areas (Metsähallitus, 2019a). According to the Metsähallitus land use plan for the Käsivarsi Wilders Area (Metsähallitus, 2019a) and for Saana (Metsähallitus, 2017), the growing tourism industry has exerted increasing pressure on land use management practices in recent years.

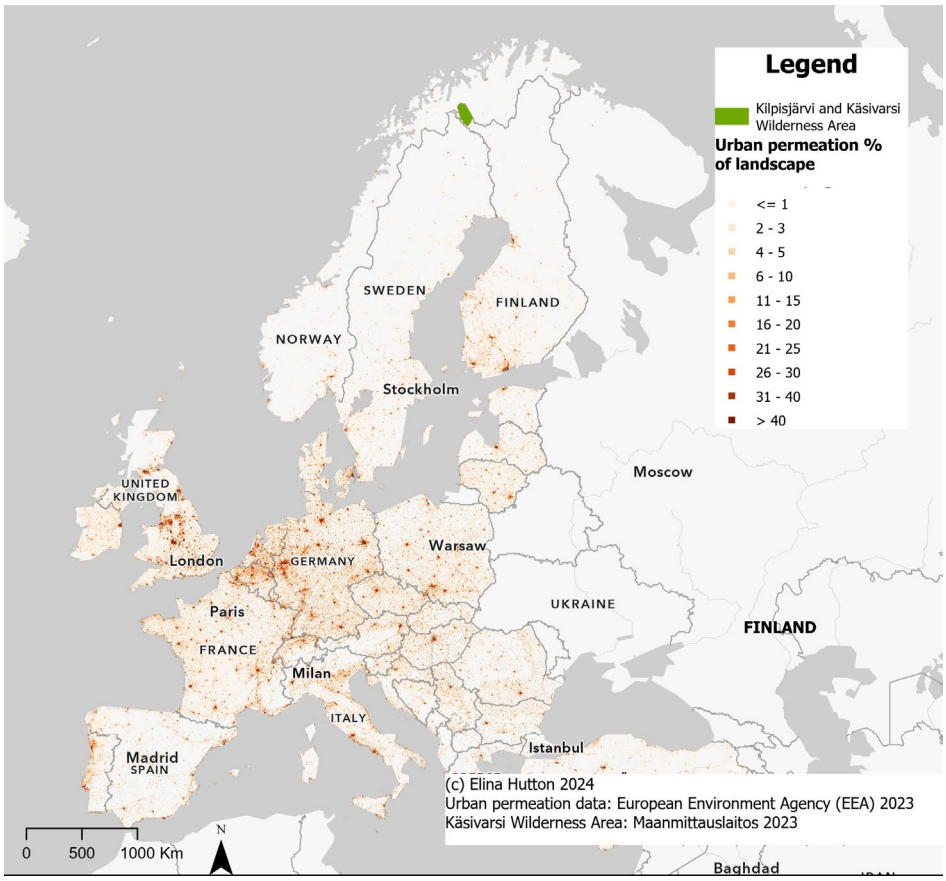


Figure 1 Study location is in sparsely populated North-Western Finnish Lapland.

In the past decade, there has been a remarkable increase in outdoor activities and nature-based tourism both globally and in Finland. According to a recent national study (Neuvonen et al., 2022), a staggering 96.5% of Finns engaged in outdoor activities in 2020, with over half of them using mobile devices to monitor their adventures. Furthermore, research indicates that nature, sports, and recreation are the primary motivations for Finns when selecting holiday destinations (Suomen virallinen tilasto [SVT], 2020). The visitor statistics for Finnish National Parks demonstrate this escalating interest, which doubled between 2010 and 2020, reaching 3.96 million visits in 2020 (Konu et al., 2021). Even amidst the challenges posed by the COVID-19 pandemic, this growth trend persisted, with visitation numbers staying at 3.5 million in national parks and 7.5 million across all Metsähallitus protected nature recreation destinations in 2023 (Metsähallitus, 2024).

Alongside, the use of social media is continuously increasing (Conti & Lexhagen, 2020; Ghermandi et al., 2023). Mobile phones have excellent cameras and access to

social media applications, and internet connection is available nearly everywhere, rendering instant posting and sharing possible (Johnson et al., 2021). The culture surrounding how we share content online has changed, and many people, not just bloggers and influencers, are accustomed to sharing their lives online (Leung et al., 2013; Oliveira et al., 2020; Tech et al., 2020; Huertas Herrera et al., 2023).

Sharing a significant moment in life with peers via social media has become an integral part of any experience, which also applies to sharing great moments while travelling (Bordelon & Ferreira, 2017; Leung, 2013; Oliveira, 2020). Previously, we had to wait until the trip was over and negatives developed to share photos with our friends; today, it is possible with a couple of clicks (Prideaux et al., 2018). Visitors to even remote and iconic locations want to share their experiences (Hausmann, 2018; Teles da Mota & Pickering, 2020). Thanks to current technologies, people can even livestream and share the moment on social media as it happens: "Watch me; here I am, reaching my goals and experiencing something amazing!" Consequently, many travellers today rely on social media for travel inspiration and information (Abbasi et al., 2023). They search for recommendations on great trails and destinations, make plans, ask for peer advice, learn, and finally share the moment and return to the experience online (Conti et al., 2020; Helkkula, 2012; K. Lee et al., 2021; Leung et al., 2013; Pabel et al., 2015).

Outdoor activities are no different from other sectors of life. The same above-mentioned developments have changed how we go outdoors (Arts et al., 2021a; Leung et al., 2013; Näsi, 2020; Prideaux et al., 2018). Not only is it possible to share the activities, but it has become a necessary part of being outdoors (Memon et al., 2015; Pabel & Prideaux, 2015). Like many researchers, I argue that social media encourages people to go outdoors, explore new locations, and try new activities. It is part of trip planning, recording, and sharing, along with finding like-minded peers (Lo & McKercher, 2015; Memon et al., 2015; Norman & Pickering, 2019; Pabel & Prideaux, 2015).

The peer-to-peer advice and influence on social media platforms make it hard for traditional visitor monitoring to stay up-to-date with visitor trends (K. Arts et al., 2015; ElQadi et al., 2017; Hausmann et al., 2018; Mangold et al., 2024; Teles da Mota & Pickering, 2020; Tenkanen et al., 2017) and the increased visitation numbers cause a growing pressure on visitor management in protected recreational areas. Recent, resource-saving, and actionable information is critical for land managers and policymakers to meet the simultaneous increase in recreational land use and protection needs (Fischer & Eastwood, 2016; Huang & Sun, 2019; Kim et al., 2019). In addition, in Finland, the Wilderness Areas located within the Sami homeland face a growing risk of conflicts between traditional reindeer herding and hunting and fishing livelihoods when the number of visitors and their consequent impact on the land rises (Nepal & Saarinen, 2016; Saarinen, 2019).

The mentioned trends, the rapid growth of nature tourism and the importance of social media as a major source of travel inspiration, highlight why this study is essential. There is a need for better tools to track sudden changes in visitor interests. Also, understanding how social media affects visitor behaviour is crucial for the development of informed strategies and policies in tourism management. I address these necessities with the research question: **What are the implications of social media for visitor management in protected nature recreational areas like Kilpisjärvi and the Käsivarsi Wilderness Area?** I have divided this question into three sub-questions:

1) What is posted on social media about visits to Kilpisjärvi and the Käsivarsi Wilderness Area?
2) How does this content reinforce or challenge existing perceptions of nature?
3) What insights do social media and Big Data information-gathering methods offer visitor monitoring?

In this study, I take part in the larger discussion around the usability and implications of social media for visitor monitoring. Building on traditions of social sciences tourism research, I have formulated these research questions to explore the effects or impacts of current online tourism practices.

Social media is a natural place for social scientists to study current phenomena, as it is a place where people meet. For example, Connors et al. (2012) claim that social media data can indeed be unfiltered compared to face-to-face surveys and that it is free from researcher bias (Connors et al., 2012). I will start the study by investigating what is shared on social media. Many images can belong to several content categories. My aim is to explore the representation of nature in images on social media through the identification of the bio-physical or ecological elements of nature present within social media posts, focusing on those that require little commentary, such as plants, animals, rocks, water, or weather. Social constructionism theory offers tools to interpret what these elements mean to the viewer. Greider and Garkovich (1994) discuss this concept through the example of a field. While a real estate agent views a field as a possible housing development site, a farmer looks at the same field as a potential grazing ground (Greider & Garkovich, 1994, p. 1). Similarly, when considering a tourism destination, while the physical elements are the same, they may convey varying meanings to different viewers. Through a comparison between nature's biological, ecological, and geological aspects and their presentations on social media, I aim to uncover meanings attached to nature and identify its surrounding social constructs in tourism-related social media posts.

In addition to these details from nature, I identify landscapes in the selected social media posts. I use larger elements, such as the sky, mountains, or clouds, to identify when a landscape is present in the image, as opposed to the image depicting a plant, animal, or rock, for example. From a social constructionism perspective, landscapes can be understood as interfacing between nature and culture, both a connection and

a boundary (Oksanen, 2007). Cultures, as Oksanen (2007) points out, do not merely negotiate the appearance of landscapes; they also unveil their preferences for what constitutes appealing and aesthetically pleasing landscapes, as well as those deemed unattractive or undesirable. Greider and Garkovich (1994) explain likewise that physical elements are translated into landscapes through socio-cultural processes.

I consider also the human presences, activities, and cultural elements in social media posts to study how social media maintains colonialist views. Drawing from Macnaghten and Urry, I assert that the way we use nature expresses our relationship with it. Macnaghten and Urry (1998) state that people interact with the natural environment in various ways, and these interactions are deeply integrated into their everyday routines and activities. In other words, relationships with nature are not separate or occasional occurrences but rather inherent parts of people's daily lives. Furthermore, I will discuss how content shared on social media reflects past imageries used in wilderness politics and nature tourism narratives.

Last, I discuss the implications of using social media for visitor monitoring and management in protected nature destinations. To do so, I will examine where social media directs the tourist gaze and how the hermeneutic circle strengthens it. I will review how visitor management can use this knowledge to develop tourism services and infrastructure. Furthermore, I will explore how these online nature imageries can influence nature conservation efforts.

In addition, through this study, I will take part in the discussion surrounding the use of the novel methods: Big Data and artificial intelligence-assisted data analysis tools, such as using computer vision for research and the practice of visitor monitoring. Furthermore, I introduce an innovative approach by employing geographic information system (GIS) analyses of social media images to uncover visitor preferences. This includes using viewshed analysis to map and interpret the tourist gaze, revealing how various viewpoints across the region are perceived and valued.

Next, I will outline the dissertation structure and introduce the scholarly debates surrounding the use of social media for visitor monitoring, situating this study within these academic discussions.

1.2 Social scientific approach to the construction of nature on social media

Following the traditions of humanistic and social scientific nature tourism research, in this study I consider nature through the theoretical framework of social constructionism, rather than as a biological or ecological entity. According to social constructionism, our social and cultural background shapes how we understand our surroundings (Greider & Garkovich, 1994). The influence is not

stable; it varies within places and across history, meaning that personal concepts are also dynamic. I examine the social construct of nature from social, cultural, and politically or legally defined perspectives related to nature tourism, focusing on the Western concept of wilderness and wilderness tourism. In tourism language, wilderness is often regarded as the last place at the periphery of the modern world where people can still encounter the purity of untouched nature and indigenous cultures (Saarinen, 2004b; Sæthórsdóttir et al., 2011) Several scholars have noted, however, that such untouched nature spaces hardly exist anymore, and I strongly agree. Furthermore, as I explain in Chapter Three, touristic wilderness does not always correspond with legally defined wilderness areas or ecological definitions of wilderness (Castree & Braun, 2001; Descola, 2003; Proctor, 1998; Zoderer et al., 2020).

The tourism industry has made wilderness a consumable commodity (Saarinen, 2019), which tourism marketing and traveller narratives reproduce and co-create. These productions are not born in a sociocultural vacuum. They are instead a product of a generations-long dialogue of the physical, historical, social, and cultural environments as much as the result of marketing and economics (Jokela, 2014; Laurén, 2015; Smith, 2018; Urry, 2002). The imageries constantly change and represent corresponding ideologies (Cosgrove, 2008a; Urry & Larsen, 2011). The current imagery conveys historical meanings and metaphors, creating the collective notions of today. Similarly, past images direct how we look at our surroundings today and in the future (Häyrynen, 2000).

A better understanding of tourism narratives in their socio-historical context helps us to create the tools needed to develop more sustainable tourism practices (Jokela, 2014). Social media is a highly visual environment; I am therefore interested in how visual arts have been used in constructing the concept of wilderness. I first study the role of visual arts in American wilderness politics, which can be considered the most influential Western wilderness movement. Next, I examine how the romantic landscapes of wild, untouched nature admired by the Western viewer—be they in, behind, or beyond the image—occasionally portraying native dwellers as wild, savage, or exotic objects or servants rather than equal individuals, share a resemblance with the nature tourism imageries on social media as a contemporary continuum of wilderness visual arts.

I explore Finnish tourism landscapes and the context in which tourism has developed within them over the decades. The visual representations of Finnish nature and landscapes grew in importance alongside the nationalistic movement and building of the young nation-state. Politically affiliated geographers and tourism representatives worked with and alongside artists to create a particular image of Finland and its landscapes and borders, which the early 20th-century tourism narratives and imageries repeated (Hautajärvi, 2014; Jokela & Linkola, 2013). I discuss here how the creation of nature tourism and the founding of national

parks in Finland were rooted as much in nationalistic ideology as in wilderness or environmental movements.

Nature observation and photography are reportedly the main reasons people visit protected nature tourism destinations such as Kilpisjärvi and the Käsivarsi Wilderness Area (Metsähallitus, 2019b). I use the concept of the tourist gaze as defined by Urry (1990) to examine this reproduction and cocreation of the concept of wilderness and nature on social media. According to Urry, the romantic gaze enables tourists to frame their view and focus on what they expect to see. The tourist simultaneously enacts and reproduces touristic wilderness by seeking anticipated views and participating in the repeated sharing of the same visual narratives. In the revised edition of *The Tourist Gaze 3.0* (2011), Urry identifies social media as a platform for gazing at and recreating touristic nature. These social platforms strengthen a hermeneutic, self-feeding circle by encouraging the repetition of popular images via their algorithms and through followers' tendency to react positively to romantic touristic representations of wilderness.

Due to the massive size of the available social media dataset, the research done under the umbrella of "social media and visitor monitoring" is typically quantitative, often including some level of spatial analysis and presentation of the data. I divide the research on the use of social media for visitor management and Big Data research into three themes: 1) developing artificial intelligence methods, 2) quantitative and spatial studies of visitor preferences and mobilities, and 3) theory-based or theory-guided research on tourism. My research falls primarily within the domain of theory-guided tourism research, and it is firmly grounded in the humanistic and social scientific traditions within tourism research through its theoretical framework and key concepts. The methodology employed represents a blend of three distinct approaches: qualitative analysis, spatial Big Data analysis, and netnographic observations. This research thus contributes to the testing of new methods, particularly in the evaluation of the usability of artificial intelligence techniques and GIS analyses within the broader framework of current research on social media in visitor management.

Today, social sciences, including tourism research, often rely on qualitative research methods (Nunkoo et al., 2017; Silén, 2021; Xu et al., 2020). However, from the 1930s, the social sciences, with the help of improved computation, focused on producing data about society and people in a way that was as close to neutral, unpolitical, and seemingly unbiased as possible, similar to the methods of the natural sciences (Alasuutari, 2010; Nunkoo, 2018). This quantitative research on human populations served to efficiently manage political, centralised state resources. However, as an answer to the disappointment caused by the limits of quantitative methods in explaining and interpreting complex human phenomena, the popularity of qualitative research methods in humanistic sciences began to re-emerge in the 1960s and 1970s. To quote Alasuutari (2010, p. 151), "...social science is more like

running commentaries on changing societies than the accumulation of knowledge about a stable system...". Like Alasuurtari, I perceive that quantitative methods lack the depth to explain phenomena within the society. Since the 1990s, social scientists have used qualitative research methods, such as discourses and narratives, to the point that in the twenty-first century only approximately 20% of studies utilise quantitative methods, either solely or as part of a mixed-method toolset (Alasuutari, 2010; Silen, 2021). While mixed methods are becoming more frequent in tourism studies, their integration remains limited (Truong et al., 2020; Xu et al., 2020).

However, the improvements that have made Big Data analysis tools more accessible have likewise increased research interest in such data sources, including social media. Collaboration among researchers across disciplines has meant that more social scientists are taking advantage of quantitative and spatial research tools (Xu et al., 2020), as I have done in this work. The Geographic Information Systems (GIS) computer program, for example, focuses on understanding, storing, managing, analysing, and representing spatial and geographic data, often as it relates to human interactions with their environment. These tools can be used in the social sciences to help present data and findings visually on a map (Craglia, 2000).

1.3 Methodological choices

To date, as I will explain in Chapter Five, research on social media in visitor monitoring has focused on the technical development of data collection and analysis methods and testing the usability of social media for visitor monitoring through various case studies. The latest research in the field concerns the applicability and quality of several tools utilising artificial intelligence in the data analysis (Berg et al., 2023; Y. Chen et al., 2023). The quantitative and spatial analysis of Big Data helps describe phenomena and their connectivity to other phenomena. Several studies on social media in visitor monitoring employ spatial analysis tools to map visitor behaviour or ecosystem service preferences (J. Chen et al., 2022; Fälton, 2021; Straumann et al., 2014; Tenkanen, 2017; Zoderer et al., 2020).

Spatial analysis of social media data can be used to better understand area suitability for specific outdoor activities, identify potential risks, and advance nature conservation efforts (Antoniou et al., 2016; Clemente et al., n.d.; Liang et al., 2020; Di Minin et al., 2015; Toivonen et al., 2019). At its most basic level, spatial analysis and the presentation of quantitative and qualitative data sourced from social media enable researchers to identify and illustrate popularity levels within the destination (see, for example, Angradi et al., 2018; Hausmann et al., 2019; Pickering et al., 2018; Tieskens et al., 2018). However, quantitative and spatial analyses lack the potential to understand the causality and contexts of events (Xu et al., 2020), which is the most significant drawback of these methods.

During the early stages of research on social media in visitor monitoring, platforms like Facebook and especially Instagram gained prominence due to their global popularity and the metadata, such as location, contained alongside their images and text. Since the Facebook ban on application programming interface (API) or data mining software in 2019 (Fuller, 2019; Vincent, 2021), these sites have been used less, and platforms like X (formerly Twitter) and Flickr have become more common (Breuer et al., 2022). Several studies, however, continue to use Meta-owned platforms (Breiby et al., 2023; Conti & Lexhagen, 2020; Fälton, 2021; Smith, 2021). It is important to note that some researchers fail to acknowledge these restrictions and continue their research as if there were no bans (Y. Chen et al., 2023; Ghermandi et al., 2023). In fact, I have discussed this topic with several international researchers who were unaware of such limitations, which I believe might potentially risk the integrity, reliability, and ethical standards of their research.

Regardless of the chosen platforms, the large pools of data drawn from social media for quantitative studies are usually collected using different data mining tools or API software. That said, several social science studies, possibly due to a lack of computing skills, still use manual collection methods (Ghermandi et al., 2019).

Thematic coding is the most common analysis method. While datasets can be large, many social scientists analyse the data manually (Y. Chen et al., 2023). The manual labour involved in data handling is anticipated to diminish as commercial tools like Microsoft Azure and Google Cloud Vision advance, enabling image analysis even for researchers with limited computational expertise.

My approach to quantitative data collection, handling, and image analysis mirrors that of my social scientist peers, combining manual and automated methods. Compared to the large research groups working on social media in visitor monitoring and management, I lack the resources and expertise to develop custom automated tools. I rely on the manual collection and analysis of Facebook data and utilise a commercial data mining tool and machine learning analysis service for Instagram data. I am aware of limitations of these methods for the quantitative data in terms of both collection and analysis validity, a concern that I thoroughly explore in their respective chapters.

I contribute to the methodological discussion in the field by providing more experiences in the usability of quantitative-spatial methods, especially in the use of viewshed analysis to understand visitor preferences through social media images. Additionally, I introduce qualitative netnographic research methods to understand and interpret the result of quantitatively produced data analysis in its broader social context (Xu et al., 2020). Observational methods, such as ethnography, are common in qualitative tourism research, alongside interviews and focus group studies (Scarles, 2010; Xu et al., 2020). Ethnographic methods, of which netnography is one type, are often used in social scientific tourism research to explore sociocultural dynamics, behaviours, and interactions in tourism, shedding light on tourism experiences,

impacts, and community responses. Netnography offers insights into the virtual realm and the overlap between the virtual and physical worlds (Kozinets et al., 2014). Both ethnography and netnography are based on the researcher merging into the phenomena, culture, or community being studied, and the research data consists of personal notes often transcribed into descriptive narratives, among other documentation. Consequently, subjective bias is an understood characteristic that needs to be explored and accounted for to maintain the objectivity and validity of the research, challenging the researchers' ability to achieve replicability akin to the natural sciences (Wilson & Hollinshead, 2015). In tourism studies, researchers often occupy multiple roles simultaneously—as tourists, locals, or both—similar to my position in this study. This multifaceted involvement necessitates an additional layer of self-reflection, which is integral to ensuring the integrity of the research findings (Scarles, 2010).

The results of studies exploring social media in visitor monitoring are promising, albeit not entirely without reservations. These reservations most often relate to privacy concerns, the bias of the study towards those visitors who are active on social media, or the difficulty of estimating the representativeness of the data (Barros et al., 2022; Y. Chen et al., 2023; ElQadi et al., 2017; Jarić et al., 2020; Teles da Mota & Pickering, 2020; Tenkanen et al., 2017). Recently, there have also been rising concerns about the analysis itself. Artificial intelligence allows for fast analysis of massive data pools, but research shows that the quality of such tools varies (Berg et al., 2023; Ghermandi et al., 2022; Wilkins et al., 2022).

For this study I collected images from Kilpisjärvi and the Käsivarsi Wilderness Area and their adjoined text captions from Facebook and Instagram. I here combine computer vision image analysis, spatial data analysis and presentation, environmental data, and quantitative social media content analysis. I test if computer vision tools are suitable for practical work in visitor management and use research methods that only require minimal or basic coding skills. Further, to root the research in the duality of the real and virtual worlds, I use netnographic research notes to clarify the context in which these social media posts appear.

This comprehensive methodological approach enables me to spatially analyse the visual portrayal of tourism landscapes and juxtapose it with more objective ecological, geological, and legal landscapes. While adhering to Meta's prohibition on data mining software, I collected data through a combination of manual efforts and the use of commercial tools designed for marketers focusing on brand awareness. Despite yielding a smaller dataset than typical for Big Data research, I selected these tools because they are accessible to individuals engaged in visitor monitoring and are readily adaptable for use in their routine activities.

Qualitative and quantitative methods are often associated with differing epistemological and ontological paradigms; however, they are not incompatible. Even though employing quantitative methods in social scientific tourism research

is not straightforward, the differentiation between qualitative and quantitative methods primarily pertains to technical aspects: it is elements of the research, analyses, and reporting processes and traditions, even the style of academic writing, that are unlike (Silén, 2021). Tourism research has, for example, accepted the use of the first person in academic peer-reviewed journals (Wilson & Hollinshead, 2015), and this personal approach is an integral part of ethnographic research. Combining quantitative and spatial data analysis with insights from netnographic research notes provides a unique opportunity to tackle the research question comprehensively. I stand firmly on humanistic, qualitative tourism research traditions, borrowing methods and knowledge from tourism geographers, the natural sciences, and even computer studies to enrich and strengthen the research. By doing so, I will contribute to building new research traditions in the social sciences and challenging methodological boundaries.

This work's practical contribution is an insight into the vision of touristic nature presented online, which local land management and protection authorities can use in their daily work. Furthermore, it will provide guidance on how to use social media in the practice of visitor monitoring.

The academic contribution of this work is its development of the new research area of using social media and Big Data in visitor monitoring and management in protected recreational areas by bringing in more evidence of the usability and limits of the method itself. Further, I bring novel understandings of its applicability by making spatial comparisons between visitor experience and objective ecological, geological, and legislative aspects.

1.4 Structure of the work

The dissertation begins by examining socially constructed nature theory, the representation of wilderness and nature in art, and the creation of tourism imagery. In Chapter Two, I introduce the theoretical framework of this research and explain how I approach the ambiguous dilemma of the idea of nature. I work within the theoretical framework of socially and culturally constructed concepts of nature, and I detail how the society that surrounds us shapes our understanding of what we call "nature."

In this study, I also discuss the imageries on social media as a popular continuation of wilderness in visual arts and, as such, as a representation of the hermeneutic circle of tourism participation in the co-creation of destination images. I apply the romantic tourist gaze conceptualised by sociologist John Urry to the context of social media, similarly to Urry and Larsen (2011). Urry's tourist gaze, inspired by Foucault's theory of the medical gaze, is more than seeing; it is seeing tourism landscapes and artefacts in a certain way learned and structured within social interactions among peers,

hosts, marketing, media, travel companions, and even historical events. Intertwined with the gaze, the bodily performance of tourism complements the theory of gazing with a bottom-up construction of the tourism experience (Larsen & Urry, 2011), drawn into this study through an analysis of the physical enacting of tourism both offline and online.

To start exploring how the tourist gaze upon wilderness has developed over the decades and to open the context of culturally and politically shaped nature, in Chapter Three I discuss wilderness politics and tourism development in the USA and consider the role of visual arts in the movement. Due to the American wilderness movement's central role in composing Western wilderness ideology, many researchers approach it from a North American perspective. However, there is a need to study the relationship between visuals and nature recreation destinations elsewhere, such as in Finland. Therefore, the chapter continues with an introduction to the visual representation of Finnish landscapes through three time periods typical for Finnish landscape discussion: pre-independence (before 1917), nation-building (1917–1945), and the post-war rebuilding period (1945–1960) (Häyrynen, 2004; Hautala-Hirvioja, 2011; Jokela & Linkola, 2013; Linkola, 2013).

In Chapter Four, I introduce the geographical, ecological, and cultural landscapes of Kilpisjärvi and the Käsivarsi Wilderness Area, which I use as a case in this study. Furthermore, I examine how visual arts and narratives have been used in developing the region as a tourism destination and touristic wilderness. I conclude the chapter by describing contemporary tourism in Kilpisjärvi and the Käsivarsi Wilderness Area.

Next, I move on to the methodological part of the dissertation. First, I dedicate Chapter Five to discussing the various uses, challenges, and current research focuses of studies on social media in visitor monitoring and management. Using social media in visitor monitoring and management research is a new field, and research is ongoing to develop suitable data mining and analysis tools. Moreover, the possibilities brought about by fast developing artificial intelligence (AI) analysis tools make the method simultaneously more complex and accessible. An increasing number of research and pilot studies help to explore the opportunities and limitations of social media in visitor monitoring and management.

In Chapter Six, I describe the methodological steps and obstacles of this multi-disciplinary and multi-methodological study. Like many social media researchers within the social sciences, I use manual and automated methods for data collection and analysis. In this chapter I explain the process of manual data collection from social media, as well as the use of automated and manual analysis methods. Further, I detail how I analyse the data using ArcGIS Pro 3 software for spatial analysis. With this spatial analysis, I connect the quantitative data with the natural, geological, and political features of Kilpisjärvi to understand how social media content relates to offline or real-world realities. In addition to the quantitative data, I apply

netnographic observation methods to several Finnish Facebook groups to collect data for a qualitative analysis.

Chapter Seven is where I present the results of the data analyses. The application of mixed methods and the reporting of the results of both quantitative and qualitative analyses mostly follows the traditions of quantitative research reporting. However, due to the nature of the mixed-method research, some freedom must be taken from these structures to discuss the qualitative results. I explain first the results of the Instagram and Facebook quantitative data analysis, which answers the first research question by revealing what is posted on social media during or after visits to the region under study. Next, I present the results of the spatial analyses, combining the quantitative data with the biodiversity and geographical features of the region. This approach addresses the question of how social media content maintains or cocreates nature concepts. To form a big picture insight into how visitors perform and construct the concept of nature on social media, I explain how the quantitative and spatial results reflect the social media community and online reality's interactions with the offline world through netnographic observations.

In Chapter Eight, I first discuss how, as established in this study, social media content and tourism practices reflect and cocreate the image of a nature tourism destination as a continuation of past visual representations of the region. Next, I discuss the broader scope of social media content in reflecting past wilderness ideology and its visual representations. I study how the colonial attitudes of wilderness tourism remain the central representations in social media: conquering places and admiring untouched nature. At the same time, local life at the destination is abolished or exoticised. Further, I discuss the implications of using social media in visitor monitoring; on the one hand, it is a tool for visitor inspiration and enhancing nature experiences, but on the other, it remains an uncontrolled and unpredictable forum of peer advice. Its ability to provide data to visitor monitoring professionals is becoming more available, but not without limitations and concerns.

Finally, in Chapter Nine, I conclude that maintaining such romantic and colonial images of nature on social media can be detrimental to nature protection and the development of tourism services and infrastructure in the area. We can only protect what we know, so what does it imply when protected natural areas are constructed on social media as awe-inspiring landscapes? To close, I discuss this multi-disciplinary research's methodological contributions to social scientific tourism research and practical visitor monitoring work outside academia. Using novel Big Data collection and analysis tools, which are still in development even in data sciences, can be a challenge in social sciences tourism research; thus, being able to bring forward new tools for research and show their potential for practical visitor monitoring and social sciences tourism research is a contribution on its own.

2 Socially constructed nature and the tourist gaze

2.1 The ambiguous concept of nature

In my exploration of how nature is represented in social media posts related to nature tourism, I have found myself increasingly drawn to the concept of social constructionism. Instead of viewing nature as an objective, scientific, or external reality, I see the concept as a product of social, cultural, and historical influences. Understanding how individuals perceive the relationship between humans and nature is crucial, as it greatly influences their environmental behaviour and the formulation of related policies (J. Kim et al., 2023). In this chapter, I cover the ways in which human societies construct, interpret, and interact with the natural world through political, historical, environmental, and travel industry lenses. Through this discussion, I explore the intricate relationship between society, social media, and the environment. The current chapter discusses the culturally constructed concept of nature and how it is related to and continuously cocreated in tourism photography.

Nature is mundane and familiar, yet it is a complex concept to define (Brennan & Lo, 2014; Demeritt, 2002; Grimwood et al., 2019). I do not intend to explicitly explain here what societies or cultures mean by nature, as it is difficult for even the most renowned environmental philosophers to do so (Rolston, 1997). However, I aim to provide an idea of the term's complexity and set a frame for this study.

One of the core questions of environmental philosophy is what we consider nature and, thus, the object of the human–nature relationship (Mathews, 2014). One popular answer is the wild or free landscape, uninfluenced by rational behaviour, which philosopher Holmes Rolston describes as "something born due to laws of physics, spontaneous without human interaction" (Brennan & Lo, 2014, p. 118). Critics have pointed out that this dualistic view ignores humans' part in nature and the nature humans interact with, claiming that nature can also be compatible with humans (Brennan & Lo, 2014). Further, some scholars argue that everything is nature and natural, including humans (James, 2015). Another way of describing nature is through what it is not: a cultural phenomenon or something that used to be nature but is now moulded and transformed by human labour (Rolston, 1997). Ingold highlights human involvement in landscapes through embodied movement (Ingold, 2021). Therefore, seeing nature purely as an ecological or cultural entity or a symbolic value is insufficient in explaining the complex character of material nature and its intertwined cultural and social meanings. They all are equally valid

and subject to our everyday actions, admiration, and understanding (Wall-Reinius et al., 2019).

According to constructionism, our interpretation of the world is a product of social, cultural, and dialogic interaction with society. Constructionism does not claim that there would be no reality without understanding, but it deals with how we comprehend the world rather than focusing on the physical aspects (Pernecky, 2012). Indeed, nature exists and creates complex, unambiguous, and observable phenomena independent of human cultures (Macnaghten & Urry, 1998).

Tourism studies often employ constructionism to understand and explain tourist experiences and attitudes (Perneckey, 2012). Many tourism scholars use this theory to examine how destination images are created and cocreated. For example, Gilbert and Hancock (2006) discuss how destination promotion and the visitors experiencing it interact in a continuous loop, shaping and reshaping one's perception of the destination. They likewise describe how these desired portrayals change over time. The guidebooks they examine direct tourists' attention to various aspects of New York City. Historical narratives held significance in the late nineteenth century, while consumer practices took the spotlight during the interwar period and cosmopolitan sightseeing emerged as the highlight after WWII. These focuses were not born from a vacuum but reflect the contemporaneous political and cultural needs and trends among governments, industries, and the tourists themselves, Gilbert and Hancock conclude.

Urry and Larsen also frame the place identity of a tourism destination as a process. Locals and visitors actively create and perform experiences associated with these places, shaping their meaning and significance for tourism (Urry & Larsen, 2011). The physical environment or place does not become a place or destination on its own. According to Urry and Larsen (2011), the authenticity and experience of a place are constructed through the actions and performances of the people who engage with it.

Similarly to the study of place or destination images and identities, social constructionism is used in tourism studies to explore human–nature interactions at destinations. We can study human–nature relationships through the meanings people give to the concept of nature. These meanings, like place identities, are not born in vacuum. Despite each person facing nature as an individual, the cultural background impacts the meanings they attach to nature and its elements (Castree & Braun, 2001). Thus, it can be said that nature is not a subjective, lonely experience, but the sum of community experiences and cultural values imbued in its context. A person's relationship with nature is not a static concept; it can evolve over time and vary across different locations, and individuals may even hold multiple, potentially conflicting relationships with nature simultaneously (Flint et al., 2013). This network is imperative to consider when studying how nature and the nature relationship are presented on social media, where a person can hold several roles.

Similarly, these social processes define how we use nature or how we express our relationship with nature (Valkonen & Salonen, 2013). Experience is never merely a reflection of what someone did; it is constructed through discourses of prior knowledge and power (Smith, 2019). Outdoor recreation is one form of nature practise that also takes place in the cultural ecosystem (Hiedanpää et al., 2010). Furthermore, seeing and observing nature is crucial to the human–nature relationship (Macnaghten & Urry, 1998). The same cultural values define the aesthetic quality of a particular location (Figueroa-Alfaro & Tang, 2017) or our preferred behaviour in nature (Rantala & Varley, 2019). Thus, I propose that our destination choices and travel practices are also representations and enactments of culturally and socially constructed understandings of nature and its value to us.

The possible positives of interacting with nature, or ecosystem services, are the economic, social, mental, or physical health benefits that humans obtain, either directly or indirectly, from ecosystems (Flint et al., 2013). There are many motivations to go to nature: picking berries, exercising, observing nature, getting fresh air, or challenging oneself in extreme sports. Nature can offer risk, adventure, relaxation, or admiration, inspiring time outdoors (Bell, 2008). Finding oneself or a spiritual connection can incentivise going into the "wilderness" (Cronon, 1996). Through aesthetic values, landscapes can significantly impact human well-being (Song et al., 2020). Furthermore, interacting with nature and the value experienced (Valkonen & Salonen, 2013) can increase knowledge of and interest in environmental issues (Urry & Larsen, 2011). The concept of ecosystem services highlights the growing influence of the idea that nature provides various services that contribute to human well-being, and this notion informs decision-making processes related to environmental management.

2.2 Cultural, political, and social natures

Throughout this study, I distinguish between nature as a set of physical elements and entities or phenomena which exists independent from human interactions and interpretations and the concept of nature, which is socially constructed. Nature has different meanings in different times and spaces (Evernden & Evernden, 1992). A person's concept of nature depends on their multi-layered cultural, social, and personal background (Järviluoma, 2006). In addition, human history shapes our concept of nature (Macnaghten & Urry, 1998; Peterson, 2001) and vice versa; the natural world surrounding us guides even the words we use to describe it (Peterson, 2001). Flint, drawing from the theories of Bordeau and Simmons, discusses how different cultural viewpoints have influenced human–nature relationships (Flint et al., 2013, p209). These perspectives have ranged from the desire to exert control over nature in the attempt to domesticate wild environments to idealised or "Edenic"

conceptions of nature, alongside the belief in stewardship responsibilities driven by religious teachings or ethical principles (Flint et al., 2013).

Religions, history, and cultures have strongly influenced the concept of nature, including the very linguistic roots of the word. The Latin word "natura" derives from the verb to be born. This term initially conveyed a dynamic and lively concept akin to the ancient Greek "phusis," which comes from verbs related to growth and appearance (Ducarme et al., 2021, p. 1025). Especially with the Christianization of the Roman Empire, the meaning of "natura" underwent a shift towards a more static and passive idea, linked to creation and the static set of things in the hands of god, moving away from the concept of a changing process to a more static and inert idea. This notion was eventually taken worldwide as a part of European colonialism (J. Kim et al., 2023). The transformation is also noted in other European languages, such as Finnish, where the semantic shift aligned more with the static and inert view (Ducarme et al., 2021). The conceptual division between humans and nature is typically rooted in the theological interpretation of god (s), the divine, which places humans in control of nature (Oksanen, 2012). Ducarme et al. (2021, p.1021) explain that the current distribution of nature-related morphemes corresponds to the major civilization areas shaped by agriculture, urbanization, and dominant religions over the past o two millennia, independent of linguistic and evolutionary connections.

In addition to the social construct of the intangible idea of nature, humans physically construct nature. There are few, if any, untouched areas in the world (Saarinen, 2019; Vannini & Vannini, 2016). Thus, whatever we understand as and call natural is also made or defined by humans (Flad, 2009; Peterson, 2001; Plumwood, 2006). Environmental philosophers question where to draw the line between what is humanmade and what is not; for example, are farm animals part of nature (Mathews, 2014)? The border between natural and built environments is unclear (Mathews, 2014). National parks are often considered natural environments; however, trails, huts, rest areas, toilets, and boundaries are built by people (Bacheller et al., 2017; Gissibl et al., 2012). In fact, human history and culture have impacted all of nature in one way or another (Ingold, 2021). Furthermore, each place we visit, as much as each experience, constructs our notion of the surrounding world and how we approach it (Kalaoja, 2016).

Wilderness is similarly a changing cultural concept surrounding a certain kind of nature (Cronon, 1996; Sæthórsdóttir et al., 2011). While, as explained above, nature is often used to describe something that is not human(made), wilderness usually implies the complete absence of humans (Plumwood, 2006). On the other hand, as Vannini and Vannini (2016) point out, if wilderness is the absence of human influence, it signifies that humans exist elsewhere. This existence relates wilderness back to human cultures and reflects anthropocentric values. The natural state of these landscapes is another construct of social and cultural impacts (Sæthórsdóttir

et al., 2011). Notably, the word "wilderness" only exists in Western languages, and not even in all of them (Rolston, 1997).

Etymologically, "wilderness," *wilddēoren*, is the place of wild beasts (Merriam-Webster, 2022). In the past it was the human against the wild and unknown (Weatherby & Vidon, 2018), and unbuilt nature was considered uncivilised; most did not wish to spend time in such an environment (Cronon, 1996). Only some 250–300 years ago, Europeans and Americans avoided the wilderness at any cost. They considered nature savage, even wasteful, a place to which no civil man ought go (Cronon, 1996; Saarinen, 2004b). They used the word wilderness to describe virgin regions, untouched by European hand, where any prior indigenous life and its appearances had been ignored, erased, or considered equally wild as the surrounding nature (Cronon, 1996; Lewis, 2007; Nash, 2014; Weatherby & Vidon, 2018).

The outdoors was long reserved for hard labour and livelihood rather than leisure; those who could afford such a luxury found recreation elsewhere (Milton, 2002). At the end of the eighteenth century, scientific explorations and knowledge finally tamed these frightening landscapes into exploitable resources (Gray, 2013; Nash, 1963). In this era of reason and great scientists, the discovery of matter and the mathematisation of nature erased the mythical and wild from the natural world (Brennan, 2014).

The nineteenth century also saw a change in philosophical and artistic attitudes towards the wilderness. Darvin, Marsh, and Haeckel published their works, forming the base of modern environmental philosophy and wilderness ideology (Vidon, 2016). Oksanen (2012) cites Georg Perkins Marsh, who in *Man and Nature* (1864) went as far as comparing the European impact in North America to the destruction during the Roman Empire. Charles Darwin had published his *The Origin of Species* a few years earlier. In 1866, Haeckel wrote the definition of ecology. Towards the end of the century, the modern notion of the everchanging and evolving concept of nature was adopted (Oksanen, 2012).

Today, wilderness is understood to be, in one way or another, a human creation (Cosgrove & Daniels, 1988; Cronon, 1996; Eidsvik, 1989; Kidner, 2014; Lewis, 2007; Nash, 2014; Sæthórsdóttir et al., 2011). We agree that wilderness is not an ecosystem, but a mindset towards it (Dean, 2007). Wilderness is thus an area that has characteristics considered wild by the public or, in some cases, by researchers of natural resources (Eidsvik, 1989), conservation (Anderson & Mammides, 2020), or modernisation (Kidner, 2014). Furthermore, the tourism industry holds that wilderness is increasingly valuable (Cronon, 1996; Grimwood et al., 2019; Pludwinski & Grimwood, 2021; Vannini & Vannini, 2016).

In this dissertation, I use the term wilderness to invoke its socio-cultural definition in the tourism context and, on the other hand, in reference to an area defined by Finnish law as a Wilderness Area. I use capital letters in the latter case to distinguish between these two uses. For the most part, wilderness is discussed as the observed and

experienced tourism landscape, constructed via the tourists' experiences and, most interestingly for me, in social media posts and conversations. This perceived wilderness is not necessarily the same place as the designated Wilderness Area, nor does it describe the location's scientific, biological, ecological, and geographical wild state.

2.3 Tourists' photographic practices and the tourist gaze

Visuality is one of the key tools to understand the places we inhabit and visit (Robinson, 2013). Visual representation of touristic places through paintings, drawings, photographs, and, lately, social media images demonstrate the importance of visuality in tourism. Landscapes and their meanings become collective in these visual representations (Linkola, 2013), such as visual arts or tourism promotion. These representations are a medium that allows tourists to identify places worth seeing (Butler, 1990).

The themes and objects that are included in or left out from these representations indicate that imagery is a technology of power; Linkola (2013) claims that cultural beliefs and practices influence the interpretation and value attributed to elements of the environment. Therefore, by examining the imageries of landscapes, it is indeed possible to investigate broad socio-historical and ideological processes, such as the wilderness movement or national identity politics. Tourism landscapes are studied through various disciplines, such as geographic studies, management and tourism development, and theoretical sociological studies (Meneghello, 2021).

Since WWII, economic, technological, environmental, political, and cultural changes and advances have impacted human–nature relationships and outdoor activities. While transportation developments have rendered places physically reachable and economic growth has allowed holidays for more people, photography has made destinations visually more accessible (Larsen, 2006). Before personal cameras became commonly available, professional photographers took portraits of travellers in popular destinations. Tourists shared these images and sent picture postcards to family and friends with a "wish you were here" message (Balomenou et al., 2017).

Photography quickly became an essential part of tourism practices, including nature tourism (Jokela, 2014; Larsen & Urry, 2011), and images of wilderness became produced by many more individuals than in the past as cameras replaced canvas and paint (Robinson, 2012). Simultaneously, promotional images, colourful brochures, movies, and other popular imagery grew rapidly, adding to travellers' visual knowledge and anticipation. The images previously made by famous artists were reproduced in tourism brochures and by tourists, creating the frame through which the public saw the landscapes (Jokela, 2014).

The development of technology, digital cameras, and later mobile phones with cameras has made it possible for most of us to create images and personal narratives

to mediate the new visual social reflections of the landscapes we visit (Urry & Larsen, 2011). The tourist gaze is the central theory in photography research in tourism studies (Costa, 2010; Fälton, 2021; Larsen, 2006; Olafsdottir & Karlsdattir, 2013; Perkins & Thorns, 2001; Robinson, 2012; Urry & Larsen, 2011; Xu et al., 2022). Curiosity and the desire to view and experience landscapes outside of everyday life enhance tourists' sensitivity to the observation of the visual elements of the landscape (Fälton, 2021; Scarles, 2014). This "gazing" is different from looking at everyday surroundings.

To be recognised as a destination, a place needs to exist in the minds of those who interact with it (Maher et al., 2021). A place is defined through the imagery and narratives associated with it. Narratives produced in destination marketing and branding work are central to creating this existence (Morgan & Pritchard, 2007). In turn, the destination's promotional material, the entertainment industry, the media, and other tourists' images and behaviour influence the tourist gaze (Urry & Larsen, 2011). Furthermore, online user-generated social media, reviews, blogs, videos, and similar content are influential factors and challenges in destination branding (Jabreel et al., 2017; Lund et al., 2018). Jenkins (2003) describes this self-perpetuating chain of visualities as the hermeneutic circle of representation. These elements impact tourists' expectations of what they will experience at the destination and how they will reproduce that experience in photographs.

The tourism industry creates the particular form of a place, a stage of consumption in the promotional imagery (Edensor, 2001; Grimwood et al., 2019). Landscapes and cityscapes become familiar through images and narratives even without visiting the location (Fälton, 2021; Laurén, 2015; Scarles, 2009). Nevertheless, the visit is still worth it, if for nothing else but experiencing the place and being "in it" oneself (Frow, 1991; Scarles, 2009). In their travel stories, journals, and, increasingly, online blogs, vlogs, and social media posts, tourists repeat the images and narratives they are familiar with from tourism marketing and promotion (Schwartz & Ryan, 2021). Physical elements no longer form the landscape alone; they must be decoded to be consumed by tourism, as Mitchell (1995) explains. Cultural interpretations are the embodiment of the landscape. These representations become so real that tourists visit these social constructs while interacting with the physical landscapes (Frow, 1991). Hence, tourism reflects the prevailing social structure and desires (Urry, 2002). Culturally desirable landscapes, such as beaches, seasides, and mountains, are selected to promote tourism worldwide (Bell & Lyall, 2002; Edensor, 2001).

This pattern of repetition and imitation of imagery by tourists constructs, reconstructs, and changes the representations of physical landscapes (Jenkins, 2003; Schwartz & Ryan, 2021). The curious and seemingly innocent gaze with which the tourist observes their surroundings is an element of the appropriation of said landscape (Bell & Lyall, 2002). Photography is used to objectify and capture the visited places in photographs, postcards, and souvenirs to be shared repeatedly with

friends and family (Olafsdottir & Karlsdattir, 2013; Urry & Larsen, 2011). We no longer need to wait until we return home to share them with peers, as internet access and social sharing platforms have enabled us to share in real-time with a global audience in a few clicks (Lo & McKercher, 2015; Siegel et al., 2022). Online-enabled interactive information sharing among peer tourists has strengthened the tourists' role and influence in the circle of representation (Balomenou & Garrod, 2019).

Colonialist practices prevail in the use of images by the tourism industry for place branding. Furthermore, many adventure tourism products reproduce colonial constructions of nature and wilderness (Pludwinski & Grimwood, 2021) by employing narratives that invite the visitor to explore a wild, unconquered landscape (Grimwood & Johnson, 2021) and by offering activities that were not originally offered at the location. Husky mushing or igloo overnights in the Finnish Lapland are good examples of these introduced narratives (Saarinen, 2019). These repeated representations become so real that tourists visit these social constructs while visiting the physical landscapes, thinking they form a natural co-existence (Frow, 1991; Laurén, 2015). The places that are regularly visited become famous landmarks, just as the barn in Figure 2, which is regarded as the most photographed barn in America (Frow, 1991).

Figure 2 "We are not here to capture an image; we are here to maintain one." DeLillo, on visiting the Jackson Hole, the most photographed barn in America. White Noise 1985 (Frow, 1991). Image credit: Jon Sullivan, PD Photo 2004, Creative Commons

Nearly 200 years after the invention of the camera, the basic principle of photography has not changed (Benjamin, 1972). The photographer decides on the object, the arrangement, and the framing of the image, as well as the post-production (Balomenou et al., 2017; Lo & McKercher, 2015). As Schwartz and Ryan (2021) explain, photography has culturally constructed practices and codes of conduct. Therefore, a photograph is always subjective: it represents reality as the photographer perceived and understood it. A photograph is not a neutral copy of what happened but part of a performative engagement with the experience (Scarles, 2009). Similarly, according to Urry, the tourist observes and documents not the physical reality but the socially constructed and romanticised imagery of a commonly agreed upon idea of reality (Urry, 2011). Photography is, thus, a way of exploring the landscape as one sees it and chooses to capture it in their image (Sontag, 2005).

In this light, it is evident that, far from being a passive gaze, tourism photography is an active performance reflecting and representing a complex socially, culturally, and politically constructed idea of the space (Urry & Larsen, 2011). An image is an embodied visuality in which moments of anticipating, engaging, remembering, and reliving the experience are represented and shared (Scarles, 2009). In the act of photographing, the tourist constantly negotiates the space while exploring it physically. Through these visualities, tourists collect sights and position themselves within and alongside the relevant places (Scarles, 2014), often considering the expectations of the future audience (Jenkins, 2003; Lo & McKercher, 2015).

This kind of landscape reconstruction enables tourists to appropriate and take the experience with them (Schwartz & Ryan, 2021) and share it with others (Balomenou & Garrod, 2019; Larsen & Urry, 2011; Urry, 2002). Urry's romantic tourist gaze is firmly attached to the romantic wilderness ideology of the past, which involved solitude, privacy, and a personal—or even spiritual—relationship with the landscape (Urry, 2002). This romantic gaze continues to be one of the most common motives for nature-based tourism (Olafsdottir & Karlsdattir, 2013) as Western cultures continue to romanticise the "wild" and tourism marketing in places like Lapland promote their destinations as "Europe's last wilderness" (Olafsdottir et al., 2013; Nash, 2001).

While the wilderness has maintained its persona of a rejection of modernisation, which it gained in the era of Romanticism, it is no longer completely isolated from society; rather, it has become a commodified arena for wilderness tourism experiences (Vannini & Vannini, 2016). It can even be said that the wilderness is changing from the absence of civilisation to an active and performed wilderness (Saarinen, 2004b; Vannini & Vannini, 2020).

2.4 Social media as a community

There is an array of studies on tourist landscape preferences and cultural ecosystems services related to the study of landscape, many of which have lately chosen to utilise social media as a data source (H. Zhang et al., 2022). Social media has changed how visitors can participate in the cocreation of the destination image (Iglesias-Sánchez et al., 2020). As I have explained, by sharing their photos on social media, people contribute to the hermeneutic circle that determines how a destination is seen and, again, reproduced in more images (Bærenholdt et al., 2017; Caton & Santos, 2008; Urry & Larsen, 2011).

Social media travel narratives impact travel intention in complex ways; for example, they create a positive envy through which tourists want to experience the same destinations as others (H. Liu et al. 2018; Siegel et al., 2023). Numerous studies explore the impact of travel influencers and content created by other social media users on travel motivation (Magno et al., 2018; Pop et al., 2022). These online interactions happen in communities of people who have not necessarily ever met, yet among whom there is a sense of belonging to the same group (Hausmann et al., 2018; Rokka, 2010; Teles da Mota & Pickering, 2020). The motivations behind sharing travel-related content differ, but generally, users feel a sense of meeting personal goals when they share their stories. These goals are varied, but commonly include altruistic motives, personal satisfaction, and self-fulfilment (Oliviera et al., 2020).

Some social media platforms, such as Facebook, encourage active participation on the platform by granting status symbols to active users. When sharing is a means to gain recognition in the community, the images of admired landscapes can become online consumables (Hall, 2020; H. Liu et al., 2018; Smith, 2018). As Arts and colleagues (2021) describe, the ability to like and interact with other users' posts creates a feeling of connection and sharing in the experience. Furthermore, the motivations behind selecting hashtags relate to the desired goals and include self-presentation, storytelling, inventiveness, seeking information, venting, and following common practices (Erz et al., 2018; K. Arts et al., 2015).

The social and cultural construction of ideas, such as the concept of nature in the context of this research, is developed through interaction within meaningful communities. To influence individuals' attitudes and perceptions, social media must therefore be viewed as a community in itself. Previous research indicates that social media groups indeed function as communities wherein shared social and cultural values, as well as codes of conduct, shape our understanding of and relationship with nature, among other concepts (Oliveira et al., 2020). As a result, tourists arrive at a nature tourism destination with a notion of what the destination should look

like (Narangajavana et al., 2017). The motivation to produce the photographs they assume they are expected to capture guides their behaviour (Siegel et al., 2023). Siegel and colleagues (2023) call this social media-induced tourism, claiming that social media has a strong impact on how visitors interact with the destination. In this light, it is apparent that social media acts as a platform for the cocreation of the destination's image and visitors' understanding of nature within a nature destination. Consequently, I, too, assert that social media can influence how we perceive and interact with nature at a given destination.

In this study, I will thus also investigate how this sense of community manifests on social media platforms. If such community manifestations are not observed, then it will become imperative to critically evaluate the extent to which social media impacts our perceptions of and attitudes toward nature or tourism destinations.

3 Visual (re)production of wilderness

3.1 The American wilderness movement and the pictured landscape

As discussed previously, visuality and images play a crucial role in shaping our perceptions of places and igniting our holiday aspirations. However, before examining social media images depicting tourism destinations, I seek to understand the historical roots of the contributions that visual arts and imagery have made to constructing the concept of wilderness as we perceive it today. This exploration commences with examining the American wilderness movement, which laid the foundation for our modern understanding of wilderness and its significance. Subsequently, I delve into how tourism has commodified the notion of wilderness, transforming it into a marketable commodity. Finally, I explore the significance of landscape art in Finnish history, uncovering the meanings attributed to wilderness within the Finnish cultural context.

The landscape in front of us is a dialogue between nature, which exists without human interpretation, and the viewer's cultural background (Oksanen, 2007). The landscape's imageries represent society's relationships with its surroundings (Hautala-Hirvioja, 1999), and they are therefore an excellent source for revisiting past ideologies (Andrews, 1999; Jokela, 2014; Kaufmann, 1998). The landscape imageries are representations of the historical emergence of nature and needs to be considered within the context that shaped and sustained it (Bewell, 2004). By examining the conceptual roots of landscapes, it is indeed possible to investigate broad socio-historical and ideological processes (Sörlin, 1999: 106). Sörlin (1999) explains that landscape elements—mountains, rivers, or human-made structures like roads—have been socially and culturally replicated and translated into landscapes. This process happens through a variety of media, such as narratives, visual arts, popular media, museums, and educational institutions, such as schools, and even- or perhaps, especially - maps (Bevell, 2024). Häyrynen (2000) suggests that national landscapes infuse individual scenes with national historical-cultural narratives, expanding them into concrete and metaphorical representations of the entire national territory. Today, there are many studies on landscapes that combine real environments and their representations in visual and textual media. Moreover, these studies now often include a focus on the place itself, its history, and its ideological representation (Käyhkö et al., 2004).

Visual arts have played an essential role in shaping what we understand as wilderness or our preferred outdoor landscapes (Vidon, 2016). From the mid-

nineteenth century, philosophers and artists have quested into nature to escape the modern, technological world and its hardships for man (Brennan & Lo, 2014; James, 2015; Mathews, 2014). Countless artists supported the political wilderness movement by rendering the desired image of wilderness visible. These artists had a significant role in painting the American wilderness, shifting it from a frightening wasteland with exploitable resources to an alluring and enchanting place (Cronon, 1996). In the mid-nineteenth century, The Hudson River School artists, like Thomas Cole, Jasper Francis Cropsey, Frederic Edwin Church, and Albert Bierstadt, followed by many other artists, portrayed the American wilderness (see Figure 3) as a feature distinguishing America from the Old Continent and reflecting the emerging national identity of the New World (Avery, 2009; Cosgrove, 2008b; Flad, 2009; Hall, 2002).

The visual arts were akin with literature; authors Henry David Thoreau and Ralph Waldo Emerson pioneered the image of a romantic wilderness in American literature (Dean, 2007). They portrayed wilderness as the place where man can finally reunite with the spiritual and authentic self. In turn, the European Romantic period authors, such as British poet Wordsworth, depicting nature in more bucolic, pastoral terms, evoking the beauty of the countryside and garden-like landscapes. They frequently idealized nature, using it as a symbol for beauty, and a background for emotional depth, and moral truth. Furthermore, they often reflected on it as a counterpoint to human artifice and social injustice (Oerlemans, 2002).

Figure 3 Painting capturing the Romantic era's sublime and untamed American wilderness. View on the Catskill – Early Autumn by Thomas Cole 1837. © The Metropolitan Museum of Art

While the imagined virginity of the wilderness in America was the object of admiration, in Europe, such landscapes were already rare at the wake of industrialisation in the nineteenth century. Instead, Europe consisted of a combination of natural and cultural landscapes (Schnitzler, 2014), and artists typically portrayed landscapes with human presence in the form of shelters, trails, or even human figures (Bordo, 2000). Similarly, American Romantic wilderness writers often focused on solitude and self-discovery in vast landscapes (Dean, 2007), while British Romantics highlighted the connection between individuals and their community within nature (Bewell, 2004).

Among the most famous of the European wilderness paintings is the "Wanderer above the Sea of Fog" (1817) by Caspar David Friedrich: in the centre of the image, a solid masculine figure is looking down over a misty mountain valley from above, a landscape which the viewer of the painting cannot see. The viewer is left to watch the back of the man; we cannot see his face, we do not know his expressions, and we thus cannot know what he thinks about the landscape (Grave, 2023). The painting, presented in Figure 4, has inspired countless imitations, and its resemblance can even be seen among many social media posts today (Smith, 2021).

Figure 4 Iconic Romantic era painting capturing the awe and contemplation of nature's vastness. Wanderer above the Sea of Fog by Caspar David Friedrich, 1817 © SHK/Hamburger Kunsthalle/bpk Foto: Elke Walford.

Landscape photographers followed painters in promoting a pristine American wilderness. They photographed the sublime wilderness, with its grandeur, awe-inspiring mountains, and rock formations, motivating many tourists to experience these landscapes themselves (DeLuca & Demo, 2009). However, it was not only nature tourism that they inspired; the era's photography has been widely criticised for the colonialist representation of the land. Such photography reconstructed a pristine, untouched, and wild landscape where indigenous cultures did not exist, continuing the earlier painters' tradition (Berger, 2003; DeLuca & Demo, 2009).

Ansel Adams was among the most influential twentieth-century American environmentalism photographers (Cosgrove, 2008b; DeLuca & Demo, 2009). The Brower's Sierra Club often commissioned him in the 1930s and 40s. Adams later claimed that the club's books and related exhibitions were influential in shaping 1960s American environmental attitudes and the push for the Wilderness Act to be passed by Congress (Cosgrove, 2008b). The involved artists' works strengthened the idea that the frontier, the last wilderness, and even the "wild cultures" within were something modern society should conserve (Vidon, 2016). Artists portrayed landscapes and narratives which the educated and wealthier people in the cities admired (Hautajärvi, 2014). Inspired by these paintings and photography, tourists in the 20th century sought to experience the same landscapes in the spirit of earlier *voyage pittoresque* (Vallius, 2014). Reproducing images known from sketches, paintings, and, later, photographs of recognisable landscapes became the sign of cultural education.

3.2 Making a tourism product called wilderness

The fascination with spending time in nature grew among intellectuals in the late nineteenth century. That was when the first national parks were founded around the British settlers' colonies in the US, Australia (1879), and New Zealand (1887) (Harper & White, 2012; Tyrrell, 2012). These "wild spaces" were constructed culturally and politically to meet the interests of various institutions (Cosgrove et al., 2005; Vidon, 2016) amid the rise of international concerns about imminent threats to nature and ecosystems (Tyrrell, 2012).

The first national parks were founded with a romantic preservation ethos in some of the most scenic locations. Instead of restricting the industrial or agricultural use of national resources, national parks were founded where geography or other conditions prevented their profitable use for any industry but tourism (Boyd, 2004; Tyrrell, 2012). In many national parks, indigenous peoples' history was abolished in the name of preserving "untouched nature" for modern tourists' awe and admiration of the pristine and their recreational needs (Conte, 2007; Cronon, 1996; Grimwood & Johnson, 2021; Hall, 2002; Harper & White, 2012; Vannini & Vannini, 2020).

The most vigorous critique of the untouched nature of these wilderness areas and national parks is directed towards precisely this intervention. For example, Cronon (1996) points out not only that the areas were already inhabited and impacted by humans but also that clearing out indigenous habitats is yet another human influence in these areas.

While increased free time in the 1920s was an essential driver of the development of recreational travel, another equally important factor was improved transport (Sutter & Cronon, 2002). Suddenly, families could reach destinations further away from town on weekends and holidays. The overall growth of consumerism reached outdoor recreation alongside increased free time and ownership of family cars (Sutter, 2007). In the 1920s, the US federal government invested in the development of recreational areas and road networks leading to them. In addition, railroad companies took an interest in the national parks as a great frontier for the tourism business (Bacheller & Dutra Silva, 2017). Similar industry-driven developments of tourism are seen elsewhere worldwide. For example, the German automotive industry fuelled the promotion of Norway as an automotive holiday destination (Fojuth, 2022).

Nature became a place for free time as economic wealth increased, leisure time became more available, and sports and outdoor recreation became the domains of an educated person (S. Bell, 2008). The culture of outdoor consumerism became tangible in various souvenirs, postcards, maps, magazines, and other knicknacks from national parks and other nature tourism destinations. Nature was marketed, advertised, and represented, creating an ever-growing desire to see and experience more (Nash, 1963). Soon, tourists sought places where no other tourists were, where an authentic experience would still be possible. The popularity of nature recreation led to a sensation that the wilderness was vanishing, developed simultaneously with the boundaries of the wilderness and domestication of the landscape becoming more evident (Flad, 2009). In response, a movement for conserving these landscapes was born in America. Nature was to be saved: not for its value per se, but for national identity and the future (Hall, 2002).

The Great Depression in the 1930s slowed nature tourism growth globally. However, governments also wanted to harness natural resources to heal their suffering nations: nature was to be used for leisure and fitness. In the US, the National Park Service and the parks they managed were granted an abundant budget to improve facilities and conclude landscaping work to meet the needs of recreational activities (Sutter, 2007). The intertwined development of environmentalism, nationalism, outdoor recreation, and nature tourism continued in the twentieth century after the disruptions of the World Wars (Bacheller & Dutra Silva, 2017; Cosgrove, 2008b; Nash, 1963; Sutter, 2007). The impacts of the increased use of national parks were already sparking initial concerns in the 1940s (Lewis, 2007; Neimark & Mott, 2017).

The Wilderness Act was passed in the US in 1964 (Nash, 2014). According to

the Act, wilderness is a place outside society and culture, and it should remain where "man himself is a visitor who does not remain" (Hall et al., 2008, p. 135). Today, designated wilderness areas worldwide share a similar purpose of conserving nature, while the use and activities allowed there vary (Zoderer et al., 2020). For example, in New Zealand, wilderness areas, although open to recreational activities, have no recreational infrastructure. Nature is preserved as close as possible to its original natural state (Cessford & Reedy, 2001). On the other hand, wilderness areas in the US, Canada, or Europe are often promoted as part of cultural and natural heritage (Sæthórsdóttir et al., 2011).

Indeed, wilderness is a social construct reflecting contemporary values (Larkin & Beier, 2014), including the driving motivations and values of the nature tourism industry and tourists (Saarinen, 2019b; A. Sæþórsdóttir et al., 2015; Vistad & Vorkinn, 2012). Many consider wilderness to be the last place where it is possible to find nature and (indigenous) cultures untouched by the modern world (Ólafsdóttir & Runnström, 2011; Saarinen, 2004b). These frontiers are renowned for their affordances of pioneering-like adventures (Hall, 2002) and for uplifting the spirits of visitors burdened by the modern world (Hall, 2002). As I have discussed previously, the aesthetic value of the protected wilderness areas and national parks, often represented in visual arts, is undeniable, even conspicuous. One illustrative example is that the first bogs, which are comparatively less aesthetically appealing, were protected as late as the 1940s, sixty years after the first national parks were founded in the USA (Gronon, 1995).

The tourism industry has embraced the idea of wilderness, and the reproduction and representations of what qualifies as "wilderness" is an essential part of tourism marketing and branding (Saarinen, 2004a, 2005; Sæþórsdóttir et al., 2022). The tourism industry utilises the otherness of the wilderness as a place to escape everyday life (Edensor, 2000; Pludwinski & Grimwood, 2021; Sæthórsdóttir et al., 2011). Tourism promotion describes destinations as pristine and promises escape from the ordinary (Grimwood et al., 2019; Niskala & Ridanpää, 2016). This commodification of wilderness for tourism consumption (Sæórsdóttir et al., 2011) has not changed social ideas of what wilderness should look like. Despite tourism requiring suitable infrastructure to develop, as Saarinen (2004) points out, the absence of human interference, such as infrastructure or the everyday lives of the locals, is absent in touristic wilderness imageries. A similar blurring of boundaries is seen in promotions of tourism activities in the wilderness: snowmobile safaris or adventure tours require infrastructure, yet they take place within the touristed wilderness (Rantala et al., 2018). Wilderness is considered a resource for tourism (Tverijonaite et al., 2023), and, as such, there is an increasing concern about the remaining wildness of the wilderness (Cessford, 2001; Cronon, 1996; Larkin & Beier, 2014; Tiberghien et al., 2020) as tourism growth brings in more people and requires more infrastructure (Ólafsdóttir & Runnström, 2011).

In this light, it is no surprise that academics often criticise tourism's wilderness discourse for reinforcing colonial wilderness ideology (Cronon, 1996; Grimwood et al., 2019; Niskala & Ridanpää, 2016). Tourism's discussions surrounding untouched landscapes, pristine nature, and spiritual experiences in the wilderness produce and maintain certain perspectives about how the wilderness is best consumed over other, perhaps contradictory ways (Pludwinski et al., 2021). Contemporary tourism practices strengthen the notion of the pioneering experience. Lone hikers and safari participants alike (co)create and reproduce the feeling of being the first and only people in the landscape (Pludwinski et al., 2021).

3.3 Finnish landscapes, national identity, and the environmental movement

The American wilderness movement inspired European environmentalists and artists, including those from pre-independence Finland. However, in Finland, landscapes were harnessed simultaneously for another cause: national identity building (Häyrynen, 2000). The landscape imageries portray the social representations of Finnishness, often divided in three different eras (Hautala-Hirvioja, 2021; Jokela, 2014): pre-independence national landscape imagery of the Southern Lakelands, the national-romantic 1920s and 1930s highlighting the eastern borderlands Karelia and Petsamo, and the post-war era and the rise Lapland as the new borderland (Häyrynen, 2000). With their imagery and narratives, the Finnish tourism, outdoor recreation, and environmental movements intertwined with patriotism and independence ideology (Oksanen, 2007). In this section, I explore the socio-cultural and politically constructed landscape in Finnish visual arts and how these representations reflect the Finnish nature relationship. I focus on representations of Lapland and how visual arts, environmentalism, and tourism developed alongside the emerging Finnish national identity and nation-state.

Landscapes, whether physical or reproduced in maps and art, have a significant role in building and maintaining national cultural identity (Kaplan & Herb, 2011). Therefore, I cannot ignore the history of national identity building when discussing Finnish landscape imagery (Käyhkö et al., 2004; Sörlin, 1999). The Romantic movement impacted the patriotic identity movements of eighteenth-century Finland, which was still part of the Russian Empire (Hautala-Hirvioja, 1999). There was no national history to be told, so it was shaped through narratives like Kalevala and romantic landscape art. These narratives framed a nature and natural state into which the nation's roots could be laid (Laurén, 2015). Idealised landscapes were thus employed to represent the essence of Finnish nature and Finnish identity. The thousands of lakes and their pristine surroundings in central Finland were the most common objects of attention at the time (Jokela, 2014; Laurén, 2015; Linkola, 2013).

Access to Lapland was challenging, to say the least, and Karelia in the eastern part of Finland represented rural and peripheral regions. The lack of roads meant that travelling to Lapland was a quest possible for only a few (Hautala-Hirvioja, 1999). The early travel narratives from Lapland were stories of hardship, slow progress, arctic weather, and mosquitos. Thus, Lapland was not a destination for resting but for adventures and exploration (Kirkinen, 2012; Linkola, 2013). The first visitors travelled in the spirit of *voyage pittoresque* to the wild Lapland to admire its fascinating nature: the sun that never sets, the northern lights, and the exotic native cultures. The narratives were often exaggerated, and images were carefully framed, building the reputation of Lapland as a destination of mythologies (Hautajärvi, 2014; Häyrynen, 2000; Kirkinen, 2012).

Similar to the development of the American wilderness, landscape sketches, paintings, and, later, photography were essential parts of early travel that served the scientific purpose of these journeys. Many of the early travellers to Lapland were international academics, geographers, or scientists. Italian Giuseppe Acerbi, English Sir Henry George Liddell, Swedish Carl Linnaeus, and Finnish Matias Aleksanteri Castrén visited Lapland in the seventeenth and eighteenth centuries. They not only narrated their adventures but also aimed to describe Lapland to elite society and the academic and political audience. The descriptions of the locals were typical ethnographic and anthropological works of the era, written from the European cultural perspective and enforcing the otherness of the local Sámi people (Linkola, 2013; Saarinen, 2006).

Among the first Finnish landscape imagery influencers was Zacharias Topelius. His travel narratives and images of grand landscapes from the north constructed a way of seeing the Finnish landscape and its people (Häyrynen, 2000; Hautajärvi, 2014). His work laid the foundations for how the Finnish landscape is viewed and appreciated. Topelius' book *Finland framställdt i teckningar (1845-1852)* (*Finland in pictures [1845–1852])* is the first milestone in the visual representation of the Finnish landscape on a larger scale (Häyrynen, 2000; Hautala-Hirvioja, 2011; Vallius, 2014). Topelius sought to create a narrative of a nation with a history intertwined with sacred and meaningful landscapes and narratives, some of which he created (Linkola, 2013). At the time, photography and printing technologies had developed and made disseminating imageries to a broader audience easier than it was previously. Photography was considered an accurate representation of reality; thus, it had great value for the sciences. Moreover, it was a suitable tool for representing national identity (Linkola, 2013).

As travelling slowly increased in the nineteenth century, practices surrounding viewing the landscape became an established part of the experience (Linkola, 2013). The photo publications that followed these *voyage pittoresque*, scenic journeys allowed the audience to take "virtual tours" to unknown places. In 1896, Into K. Inha published the photobook *Finland i bilder—Suomi kuvissa—La Finlande*

Pittoresque, the content of which was photographed as part of a systematic process of mapping and picturing Finland during the pre-independence era. Throughout the advancement of the Finnish self-definition process, images of Lapland were introduced into the Finnish national landscape. Attributes like wild, untouched, and representing life away from the modern world were added to the art discourse (Hautala-Hirvioja, 2011, Keski-Säntti et al., 2018).

The value of nature for the rising nation was understood to be twofold. On the one hand, there was the utilitarian view of nature as a resource for building wealth for the nation. On the other, nature's aesthetic and romantic properties were recognised as a site for the spiritual well-being of the urban man (Hautala-Hirvioja, 2021; Keski-Säntti et al., 2018). Landscape artists recorded images of hard-working people harnessing natural resources, which were equally as crucial to nation-building as images of sublime landscapes. Farming and forestry constantly needed more resources, and the voices supporting nature protection started to grow louder towards the end of the nineteenth century (Perttula, 2006). The common theme across all national romantic landscape art was the toughness of nature and the people who lived surrounded by it: the foundation for the Finnish *sisu*, the untranslatable toughness of the nation, was laid on these imageries (Kirkinen, 2012; Laurén, 2015).

The 1920s was a politically and socially exciting time in Finland. The nation gained independence in 1917, followed by a civil war and WWI. The new decade, however, began with a new harmony and positive expectations on all fronts of state politics. The decade was dedicated to building a united nation, and patriotism was strong. The focus on art was twofold: Finland was represented as a modern state with cultured cities, while appreciation of the peripheries and borderlands of Finland prevailed (Jokela & Linkola, 2013; Linkola, 2013). During the interwar years, many Finnish artists made trips to Lapland commissioned by the state or other public authorities to illustrate the far corners of the new nation-state.

Patriotism was built on many fronts; among them, geographers, artists, and tourism managers were harnessed to enhance the notion of nationhood by making Finland's landscapes, cultures, and borders known to the people (Häyrynen, 2004). The two central organisations driving this nationalistic movement were the Tourist Society of Finland (TSF) and the Geographical Society of Finland (GSF) (Jokela & Linkola, 2013). While they both had their roots in nineteenth-century pre-independence Finland, their role is more evident from the 1920s onwards. The societies were not an official part of Finnish governance but had strong affiliations with the state government through their members. In addition, many key persons were active in both societies, and there was plenty of cooperation between them (Jokela, 2014).

These two societies were especially powerful in shaping the visual imagery of Finland because the photography and maps they produced were accessible to a large

audience through schoolbooks and travel brochures, unlike visual arts, which are typically consumed by only those interested in arts per se. Due to the connections between the GSF and TSF, the imagery was very similar, thus presenting similar imagery to Finns despite their societal position. Jokela and Linkola (2013) studied nearly 900 photographs presenting "national landscapes" in 1920s schoolbooks, which were available for all, and travel brochures aimed at the wealthier elite able to travel. The tourism brochure images cover many topics about tourism infrastructure, transport, and accommodation, but typical for both publications was the dominance of the vast landscapes, often a depicting a view over a lake from a high location (Määttä, 2020).

The images from the north and east typically represented wild nature, water and nature landscapes, or human–nature interactions, whereas the images from southern Finland were developed and cultured cityscapes. Nature in the north was a no man's land, presented as available for the tourists' leisure (Cosgrove, 2008b). The wild, untouched depiction of nature symbolised the frontiers of the last remaining wilderness where the burdened townspeople could find connection to the landscape, national identity, and an exotic native culture (Hautajärvi, 2014; Hautala-Hirvioja, 1999, 2011). The Sami people were often photographed either in front of their *kota* or working with reindeer, and their otherness and inferiority to the subject-photographer are highlighted with the narratives accompanying the images. The tourism industry's highlighting of the Sámi people's exotic connectedness to nature and near magical survival skills in the Arctic continued through the twentieth century (Raento & Brunn, 2005).

The iconic landscapes were harnessed for tourism as improvements in transportation in the 1920s and 30s eased access to parts of Lapland (Hautala-Hirvioja, 1999). According to Hautala-Hirvioja (1999), art presented the rest of the country in agrarian and self-sufficient landscapes or urban settlements. However, Lapland was characterised by untamed and harsh landscapes, with dramatic details like the use of dark clouds or exaggerated cliffs in the images being used to highlight the wilderness (Hautala-Hirvioja 1999). Notably, Lapland was represented from the viewpoint of larger artistic centres like Helsinki or Paris where Finnish artists had studied (Hautala-Hirvioja, 2011). The cultures and landscapes of Lapland were representations of the pure and original, captured in romantic narratives (Hautajärvi, 2014; Hautala-Hirvioja, 2011; Niskala & Ridanpää, 2016)

Commercial tourism to border peripheries grew, especially to the Karelia region and the newly gained Petsamo, which was ceded to Finland in the 1920 Tartu peace treaty. Postcards and tourism brochures from Petsamo, such as in Figure 5, served to attract visitors and mentally attach Petsamo to the Finnish identity. Typically, travel posters of this era presented a map of Finland, showing these new areas as part of the country (Arminen, 2021). The Sámi people and culture were used to highlight the exotism and mythology of Lapland (Niskala & Ridanpää, 2016). The lack of roads

north of the Tornio river valley (Hautajärvi, 2014) slowed tourism development in western Lapland. However, Kilpisjärvi lake and the surrounding wilderness already attracted the most adventurous individuals (Kari, 1978; Kujala, 1935; Laukkanen, 1920; Malmio, 1928; Suomen Matkailuyhdistys, 1938).

Figure 5 Petsamo postcard from 1935–37.
Image: Finnish Heritage Agency (1939)

Tourism was still possible for only the elite, yet it received strong support from the state, which provided resources to build infrastructure and promote tourism in Finland and abroad (Jokela, 2014). Patriotic values related to a healthy lifestyle grew interest in hiking and skiing holidays in Lapland. The spokespeople of sports and outdoor education, like Österholm, Pihkala, and Kaarina Kari, followed the German *Wandervogel* ideology and promoted the idea of learning to know your homeland while keeping your body healthy. Consequently, the first Finnish national parks promoted outdoor recreation and the preservation of original and untouched Finnish nature. As can be seen in Figure 6, three of them were established in Karelia and Petsamo (Jokela, 2014), at the very same picturesque locations already known from the works of many artists (Hautajärvi, 2014; Perttula, 2006).

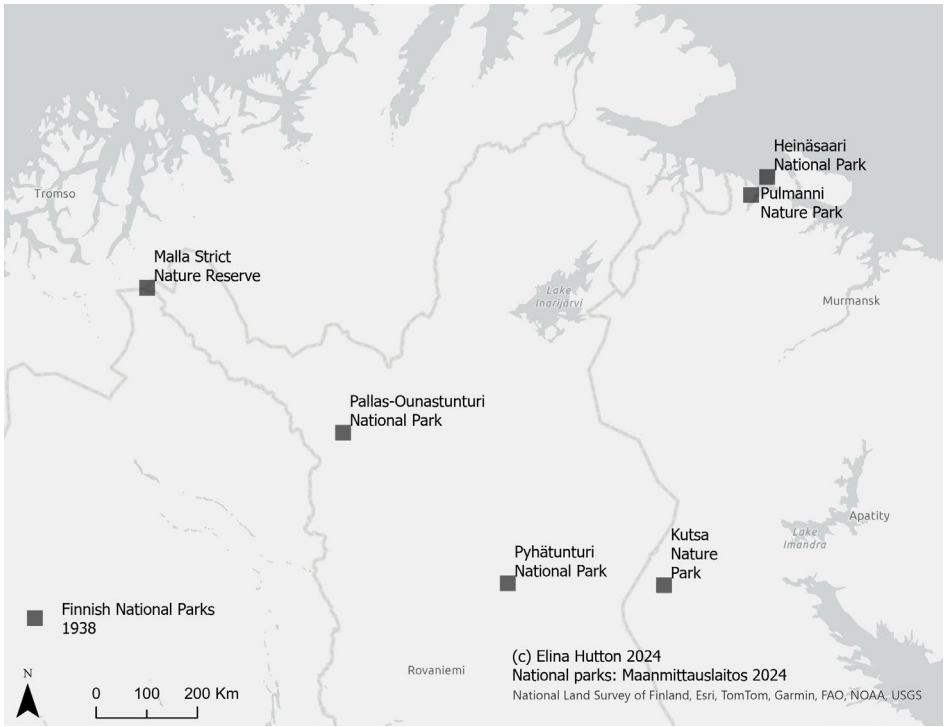


Figure 6 Lapland's protected areas in 1938 depicted on a map with 2023 state borders.

After WWII, Finland lost large areas to Russia, among them Heinäsaari and Porkkala national parks, four strict nature reserves (Perttula, 2006), and the entire Petsamo region, which had become a prominent nature tourism destination in the 1930s (Hautajärvi, 2014). After the war, Finland rebuilt the nation, its identity, and its borders. Concurrently, the areas lost in the war had to be replaced in national imageries. The "untouched" Lapland was a perfect location. Finland's last narratives of heroic wilderness now occur at the fells and bogs of wild Lapland (Häyrynen, 2000; Valkonen, 2003). In this period, Lapland truly became the place it is today: the last remaining wilderness.

Post-war nationalism and rebuilding efforts were supported by public art projects commissioned by the state, regions, and cities. Art was seen as a powerful tool for education and harmonising the idea of Finnishness. These commissioned art projects were a significant art genre in post-war Finland (Ruohonen, 2013).

Admiration of Lapland grew with stories of timberjacks, gold rushes, and romanticised wilderness. Lapland became a theme for popular music and books. The entertainment industry portrayed it as the wild northern frontier of Finland, similar to American Wild West culture. Until the 1950s, travelling to Lapland was still expensive and time-consuming. Thus, most early tourists were likely wealthier

and well-educated people inspired by the arts. The people who were interested in modern trends, like healthy lifestyles and the outdoors (Hautala-Hirvioja, 2011), sought to getting to know their homeland as a tourist. They travelled in the spirit of national romantic ideology to promote nationalism and a healthy lifestyle (Jokela, 2014). The post-war tourism promotion imagery highlighted Lapland's pristine nature, vast wilderness areas, and its characteristics as the land of freedom (Määttä, 2020). Furthermore, Määttä (2020), drawing from Hautala-Hirvioja (2013), observes that tourism imagery predominantly emphasises landscapes, with minimal portrayal of animals and humans. When depicting humans or animals, it often featured a reindeer, an exotic representation of Sámi people, or a human figure included only to illustrate the vastness of the wilderness by highlighting their small size in comparison.

The growth of commercial tourism meant that tourism's ideological and national interest was replaced by a more business-like approach, consequently impacting the tourism narrative and imagery. At the same time, improved road networks, increased income, and more free time contributed to the rise in tourism in Finland, mirroring the development of the American wilderness movement. At the end of the 1950s, the characters of nature and landscape imagery changed rapidly due to the proliferation of television, cameras, and travelling (Häyrynen, 2004).

Rebuilding the nation after the war required natural resources but also lifted the need to protect "original Finnish nature." The art of the time presented a nation with a past in nature and a future that rested on the hard work of its people. These landscapes of the nation's history were to be preserved for future generations. In 1956, the first edition of *Suomen Luonto* (*Finland's Nature*) magazine published the Declaration of Nature Protection. They aimed to maintain areas of original nature as national sites for scientific research, protecting threatened species and preserving the aesthetic values of the Finnish natural and cultural traditions (Perttula, 2006). Later the same year, seven new national parks were founded to add to the Pallas-Ounastunturi National Park and Pyhätunturi National Park, which had been established in 1938.

Photography and printing technologies have made reproducing images of famous landscapes easier. Even in the twentieth century, these images remained limited compared to what we have today (Hautajärvi, 2014). The same images were repeated for decades, leading to these locations becoming "iconic" and granted a powerfull status (Siegel et al., 2023). The repetition impacted the location's attraction and how it was supposed to be seen (Cosgrove, 2008a; Hautajärvi, 2014; Urry, 2002). As tourism was still an activity for the elite, the imagery and narratives also represented their point of view: the contrast between north–south and town–periphery was strong (Jokela, 2014).

The images from the various regions recreated the same tendencies and framing, soon creating patterns of repetition. The place's original context, history, culture,

and people became insignificant, and the only important thing was the nationally significant landscape (Häyrynen, 2000).

In summary, literature, visual arts, and popular media have collectively shaped the image of Lapland as we know it today. Paintings have influenced perceptions of its natural landscapes. Audiences have adopted these perceptions through education, publicity, and advertising. Familiar images from the tourism repertoire of remoteness and barren, uninhabited wilderness evolved from discussions about developing Lapland in tune with existing perceptions of the wilderness' possibilities and management. In the traditional depiction of Lapland, conventional romanticisation and exoticisation inherently involve the allure of the foreign and the peculiar. The depiction of its ancientness—the silence of the wilderness, and the extremes of nature, physically and mentally distant from the modern era—is shaped by humans. Lapland's fascinating otherness is present in both the photographer's lens and the eyes of the tourist receiving representations from the outside.

To understand contemporary social media imagery, I believe it is essential to contrast it with historical images and consider the motivations behind these earlier representations. Within this chapter, I have explored the construction of the concept of wilderness in visual arts, which often reflects underlying political ideologies such as environmental movements, national identity formation, or accentuating certain desired aspects of the landscape. Early tourism narratives from Kilpisjärvi were influenced by national identity politics and the political and economic incentives driving tourism development in the region. Simultaneously, indigenous Sami have been marginalised and used as exotic elements in the landscape, and ecological nature has diminished, growing nearly absent following post-WII tourism narratives and imagery.

The images shared on social media likewise play a significant role in shaping our perceptions and attitudes toward destinations. Therefore, gaining a better understanding of the content shared is crucial. By examining the evolution of imagery over time, we can discern how historical narratives and representations continue to influence contemporary portrayals. Moreover, analysing social media content allows us to uncover underlying biases, perspectives, and power dynamics that shape our understanding of destinations. This deeper understanding enables me to critically engage with the narratives presented in this study and to contribute to more informed and nuanced discussions about destination identities and experiences.

4 Kilpisjärvi landscapes and touristic wilderness

4.1 Geographical, ecological, and cultural landscapes of Kilpisjärvi

I chose Kilpisjärvi as the research case based on the knowledge I gained while working there in tourism development, visitor management, and applied natural sciences. I was familiar with its unique significance in the Finnish tourism scene, how fragile and unusual its nature is, and the challenges both tourism development and visitor management with limited resources are facing. The growing tourism industry has placed pressure on the local ecology and Sámi reindeer herding (Mäkitie & Ylisirniö, 2013; Tuulentie, 2004). The multifaceted nature of Kilpisjärvi occasionally leads to tensions among different user groups, but it also makes the region intriguing for research purposes (Kaján & Saarinen, 2016).

The uniqueness of the rugged-yet-fragile natural world around the resort village makes research like this study ever more significant. Understanding how visitors increasingly see nature through the lens of social media can provide visitor management with essential insights into what tourists appreciate and seek from Kilpisjärvi. This chapter provides background and context for the social media content selected for this dissertation. The purpose of this extensive background is twofold: to contextualise the quantitative data analyses and to enrich the qualitative research that follows by introducing the reader to the multiple levels of landscapes in Kilpisjärvi.

Kilpisjärvi village is in the municipality of Enontekiö in the northwestern part of Finnish Lapland bordering Sweden and Norway. The area is about 270 km north of the Arctic Circle. However, the proximity (50 km) of the Norwegian Sea impacts the climate, which is a mix of North Atlantic Oceanic and Eurasian Continental (Kauhanen, 2013). As presented in Figure 7 below, the area included in this study covers several protected areas: Malla Strict Nature Reserve, Saana Nature Reserve, and Salmivaara on Map A; on Map B, the Käsivarsi Wilderness Area, inside which there are the smaller Strict Nature Reserves.

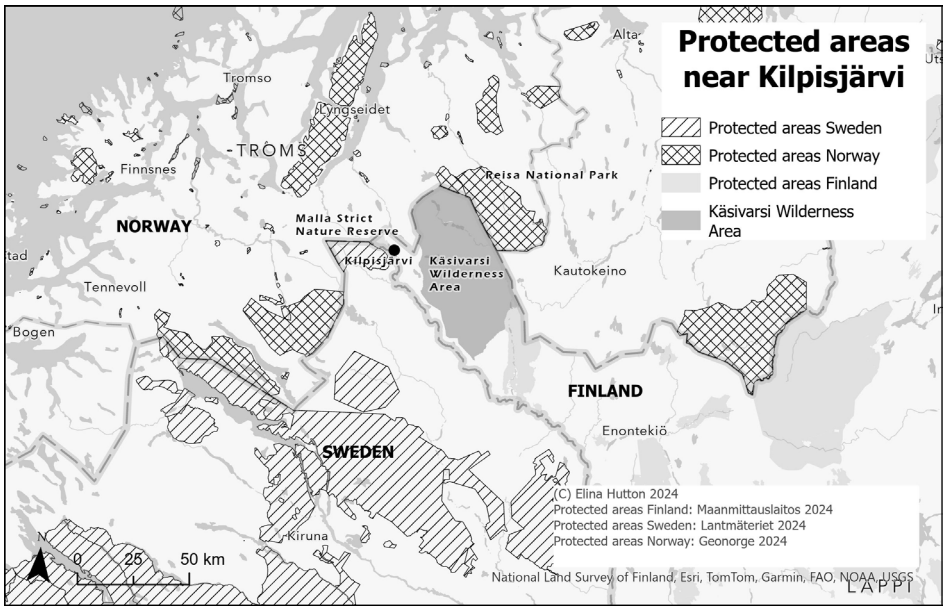


Figure 7 Protected areas in the proximity of Kilpisjärvi.

Kilpisjärvi and its surroundings are ecologically unique. It is the only region in Finland where the round-peaked fells rise to over 1000 metres. The elevation, unique geology, soil, and the mixed climate between cold and dry inland and coastal arctic climates give Kilpisjärvi unique vegetation (Jokinen et al., 2016). Similar features are found in the bordering Sweden and Norway, but the region's distinctiveness makes it an extraordinary destination for the Finnish people. The University of Helsinki Kilpisjärvi opened a biological research station in 1956, but the research had begun before Finland's independence. Malla Strict Nature Reserve, reserved for scientific research, was founded in 1916 (Kauhanen, 2013). Today, natural scientists from around the world visit the Helsinki University Kilpisjärvi Biological Research Station, and some of the station's long-time series of natural data are among the longest in the world (Lindholm et al., 2022).

Kilpisjärvi lake is at 530 m above sea level, and the surrounding fells reach nearly 1000 m. The most recognised fell in Finland, Saana, rises to 1029 m, while the Swedish and Norwegian mountains around the lake are somewhat higher. Here, the edge of the limestone-rich Scandinavian mountain range mixes with the granite bedrock, which is more typical in Finland (Luukas & Korhonen, 2021). Due to this limestone, there are dozens of vascular plants and mosses in the area that cannot be found anywhere else in Finland (Kauhanen, 2013). Alongside these florae exist invertebrates and butterflies, some entirely unique to the area. The Malla Strict Nature Reserve alone has 57 red-listed vascular plants, around 200 in total

(Kauhanen, 2013). Many of these plants can be found (in Finland) only in the proximity of Kilpijärvi village in Malla–Saana–Jehkastunturi and on a belt through the Käsivarsi Wilderness Area towards the Ráisduottarháldi massif.

The area is also the main water divide in the region. To the south, the Könkämäeno river starts its 450 km journey to Tornio and the Bothnian Sea from the Kilpisjärvi lake. The Skibotn valley drops steeply to the north, reaching the Norwegian Sea in merely 50 km (Nilsson et al., 2022). The altitude and proximity of the year-round open sea create conditions for exceptional climates and ecosystems (Kauhanen, 2013). Ice ages have shaped the landscape, leaving many wetlands, lakes, and water systems in the area, some of which have been completely cut off from other water systems for thousands of years. These characteristics appeal to scientists and make the area enticing for tourists. Hiking, skiing, photography, and fishing here offer experiences unlike anywhere else in Finland.

A subarctic climate, short growing seasons, and long winters are typical for the area and make the ecosystems susceptible to human impact, such as tourism pressure. Flora and fauna are adapted to the climate and are thus also sensitive to changes in the climate. While most plants have survival systems to protect them from one or two bad growing seasons, rapid changes in climate or other disturbances take a long time to recover from. There are efforts made in cooperation with Norwegian authorities to relocate arctic foxes, which had already disappeared from the region (Metsähallitus, 2019a); in the summer of 2022, the first successful nesting in decades was finally reported (Metsähallitus, 2023).

Particularly within Saana and the Malla Strict Nature Reserve, several plant species not found elsewhere in Finland thrive in the vicinity of the trails, albeit often concealed from unsuspecting passersby. Some of these plants are even globally rare and threatened. The trail surroundings boast a rich diversity of flora familiar to most visitors, including bilberries, ferns, heath, and globe flowers (*Trollius Europaeus*) among the mountain birch. Figure 8 showcases some of the lesser-known flora found right alongside the trails.

Figure 8 Several sub-arctic plants can be found along the trails in Kilpisjärvi. Image: Glacier buttercup (Ranunculus Glacialis). Elina Hutton

The biggest threats to the ecosystems are human-related, mostly large-scale reindeer herding (Jokinen et al., 2016; Kauhanen, 2013) and the ever-growing pressure caused by nature tourism (Häkkilä & Kauppila, 2010; Kauhanen, 2013; Saarinen, 2004a; Tuulentie, 2004). Tourism in Kilpisjärvi and its surrounding areas has been moderate until recently. Thus, little research on tourism's impact on this area of nature is available. However, the research that does exist demonstrates how vulnerable the environment is (Mäkitie & Ylisirniö, 2013; Tervo-Kankare et al., 2018; Tuulentie, 2004). Two hotels have opened in Kilpisjärvi after 2020, several privately owned rental cabins are currently being built, and a new zoning plan is being processed in 2024, allowing even more tourism development in the village.

Sámi reindeer herding is the most important form of land use in the area, and it defines the frames for land management and recreational use (Heikkinen, 2021; Metsähallitus, 2019a). Reindeer herding has been practised here since the early days of Sámi communities in the region. Herding faced significant changes when the borders between states were closed in the 1860s and again in the 1980s after the implementation of the Finnish *paliskunta* (reindeer herding district) system in the Finnish Sámi homeland (Heikkinen et al., 2005; Olsén et al., 2017). Land zoning and the building of residential and holiday homes in Kilpisjärvi have brought significant change to reindeer herding at a more local level in the twenty-first century (Olsén et al., 2017).

These changes have influenced not only the cultural and economic aspects of reindeer herding but also the ecological impact of reindeer herding (Heikkinen

et al., 2005; Heikkinen, 2021). The changing climate, especially shifts in winter conditions, has forced many herders to feed reindeer in the winter (Pape & Löffler, 2012). Reindeer herding today continues to hold an important cultural status in the Sámi community, and in the Kilpisjärvi region it also has significant economic value (Olsén et al., 2017).

4.2 The creation of Kilpisjärvi tourism

4.2.1 Pre-1930s: A roadless destination

Travellers have frequented what is known today as Kilpisjärvi village since the 1600s on their way to the Skibotn market in Norway, travelling along the Könkämäeno river. In the early twentieth century, there was no road leading to Kilpisjärvi, and the travellers arrived from Sweden or Norway along small paths or by rowing the river upstream from Karesuvanto, some 120 km south. In winter, it was possible to travel on horses along the frozen river (Oinonen, 1947). Whichever direction the traveller chose to take, arriving at the one-house village by the 20 km-long, crystal-clear lake nestled between a high rising fell and mountain peaks has been a memorable moment described beautifully in the travel narratives of the period (See Kujala, 1935; Suomen Matkailuyhdistys, 1938). The visitor numbers were low, and the first accommodation was provided at the house of the Metsähallitus ranger from the early 1900s.

The travel stories of the era (see, for example, Ekbom, Järvinen, or Nummelin in Suomen Matkailuhdistys Vuosikirja, 1931) narrate how reaching Kilpisjärvi signified an arrival to a place of rest before continuing the journey into the fells and rivers. The travel stories often mention meeting with the ranger, his family, and the Sámi reindeer herders (see Laukkanen, 1920; Malmio, 1928; Matkailutoimisto Finlandia, 1930; Suomen Matkailuyhdistys, 1931, 1938). Many botanists and biologists stayed in Kilpisjärvi to explore the flora and wildlife. While the locations around the village are mentioned in their travel stories, they are merely the places where the most attractive draws grow: the sub-arctic vascular plants (Suomalainen, 1911). The most famous of these early visitors is Ms. Kaarina Kari, who led the first recreational hiking expedition to the Käsivarsi Wilderness Area in 1933. After their arrival from Norway, Kari and her companions rested in Kilpisjärvi before the expedition (Kari, 1978). Kilpisjärvi was not a destination yet, but the starting place for an adventure.

Saana, the high fell by Kilpisjärvi village, has not always held the status of national landmark that it does today. Taarna Valtonen (Valtonen, 2019) describes in his article "Miten Saanasta tuli pyhä" (How did Saana become sacred?) how Saana used to be just another fell in a vast landscape of fells and high mountains, albeit prominent for its elevation and location by the lake and travel routes. The literature

prior to WWII, as well as artworks about Kilpisjärvi, mentions Saana and the Malla fells, usually because of their natural values or geography (Valtonen, 2019; also see journal articles in *Suomen Matkailu*). Like older travel narratives, Väinö J. Oinonen (1947) presents Saana and Malla among many other fells in Kilpisjärvi in his book about the region.

4.2.2 After WWII: The era of nation-building and tourism growth

Tourism development in Lapland was restarted immediately after WWII. Valkonen and Salonen (2003) describe how the post-war discourse portrayed Lapland as a region of Finland where nature still awaited its users. Lapland was commonly perceived as a resource serving the entire country. This discourse of otherness also extended to tourism: Lapland's untouched nature was the perfect means of relaxation for the recovering nation.

Lapland was seen as a resource for the developing nation and a gateway to the West. After the war, it was politically necessary to show that Finland belonged to the Nordic countries. Consequently, all eyes were directed to the West to distinguish Finland from its former connections with Russia, now Soviet Union (Arminen, 2021; Häyrynen, 2000). In Kilpisjärvi, finally accessible by road, this gaze was very literal, as locations like the three countries' border cairn and the Saana lookout towards Sweden and Norway were harnessed into tourism promotion. Visiting Saana became a destination for the first time in travel brochures in the 1950s when the first headlines of "this is the place that every Finn must see" started to appear in magazines and advertisements (Hautajärvi, 2014; Valtonen, 2019).

In his extensive work on tourism architecture, Harri Hautajärvi (2014) describes the developments of the Finnish Tourist Association (FTA) and its hotel building in Kilpisjärvi. Most of the guesthouses the FTA ran were lost in the war (Soini, 1944), and plans for new hotels were quickly started around Lapland. Since Finland had lost Petsamo in WWI, Kilpisjärvi was seen as a suitable replacement for the FTA to develop tourism (Hautajärvi, 2014; Heini, 1947). During and immediately after WWII, the road to Kilpisjärvi and onwards to Skibotn in Norway was improved, making Kilpisjärvi accessible through Finland. Despite not having direct access to the Arctic Sea, the road to Kilpisjärvi was named "the new route to the Arctic Sea" in the same style as Petsamo had been (Hautajärvi, 2014, p. 214). State-promoted tourism in Kilpisjärvi gained additional pull from national artists, who popularised the unique beauty of Kilpisjärvi and its wilderness in narratives (Häyrynen, 2000)—some genuine, others completely invented (Valtonen, 2019).

The romantic image of Lapland was built through art and popular culture. For example, a movie directed by Valtteri Vaala, *Maaret–tunturien tyttö*, which was filmed in Kilpisjärvi, was released in 1947. In addition to classic romantic and drama narrative, the film portrays the Sámi people and culture alongside what was regarded as the era's most iconic landscape cinematography; this imagery is displayed in Figure

9. The next significant film production in Kilpisjärvi was in 1954, when a comedy about the search for "Bigfoot" was filmed in the village. These films introduced the magic of Kilpisjärvi to a large audience (Hautajärvi, 2014).

In the 1960s, the famous author Kullervo Kemppinen wrote: "*Saanalle kiipeäminen kuuluu jo melkein kansalaishyveisiin*," (Climbing Saana is almost considered a civic virtue) and continued to describe the magnificent views of the Norwegian and Swedish mountain ranges opening to the north, west, and south (Kemppinen, 1960, p. 90). Another author, Yrjö Kokko, who spent years in the region and wrote several books about the people and nature in Enontekiö, portrays tourism in 1960s Kilpisjärvi as a clash of cultures. This clash occurred between the affluent, educated people of south Finland and the indigenous Sámi people, who were the subjects of a curious tourist gaze. However, as Kokko points out, the Sámi people were also active agents that took advantage of the situation through souvenir markets, selling items that were not necessarily authentic Sámi memorabilia (Kokko, 1966).

Figure 9 Movies helped to promote the new landscapes.
Screenshot from the film Maaret, tunturien tyttö (Vaala et al., 1947), character of Maaret standing on Salmivaara and looking towards Norway, the triangular peak at the horizon is Barras mountain, often pictured in social media images.
Image © Kansallinen audiovisuaalinen instituutti

The FTA's new hotel was built in what we know today as the centre of the village (Häkkilä & Kauppila, 2010). They chose the new location because the landscape seen from this direction was more impressive than that visible from the old Siilastupa guesthouse 5 km north (Hautajärvi, 2014). As can be seen in Figure 10, a view from the new hotel's terrace offered views towards the Saana fell. The number of tourists visiting Kilpisjärvi grew quickly, filling the two accommodations every summer and spring in the following decades. This early tourism focused on short seasons of spring skiing and summer hiking (Häkkilä & Kauppila, 2010). The Käsivarsi area became the protected Käsivarsi Wilderness Area in 1991, and the "Five Fells Trail," marked by the FTA in 1953, became part of the 800-km North Calotte Trail in 1993.

Figure 10 Tourism infrastructure was planned to facilitate the viewing of iconic landscapes. Image © Lehmusto, H.T. 1959 (Finnish Heritage Agency).

The Finnish word for wilderness, *erämaa*, refers to an unpopulated hunting ground, a meaning that was especially prominent in the past (Saarinen, 2019). Unlike the English "land of the wild beast," the Finnish word's root, *erä*, means a place where one gains food or livelihood. Traditionally, the wilderness in the Nordic context had economic importance through fishing and hunting (Hall et al., 2008), while the American concept was based more on the polarisation of society and nature (Lewis, 2007; Nash, 2014; Sutter, 2007). While the Finnish word has different linguistic roots and legal definitions, its development is intertwined with the international concept of wilderness conc. It emerged in response to societal changes, such as improved infrastructure, rising incomes, and increased leisure time. They also share the focus on preserving and appreciating natural landscapes, often as a means of national identity and cultural expression. Therefore, I cannot discuss the contemporary Finnish wilderness without considering the concept of American wilderness (Kirkinen, 2012).

Designated wilderness areas, such as that of Käsivarsi, are areas managed by Metsähallitus as part of the protection of natural and cultural values:

> "The wilderness areas are vast, uninhabited, roadless areas that have remained in a near natural state. The aims are to conserve their rugged wild nature, to preserve Sámi culture and livelihoods, and to develop the diverse use of nature." (Metsähallitus, 2022)

The Käsivarsi Wilderness Area was funded in 1991 at the same time as the other 11 wilderness areas in Lapland. Today, Metsähallitus Parks and Wildlife Finland manages them all. These wilderness areas are significant recreational spaces for the locals: hunting, fishing, berry and mushroom picking, and reindeer herding are an integral part of these locations (Metsähallitus, 2022). This inwritten use of the areas is somewhat contradictory to the American Wilderness Act's principle of the absence of society and culture. Both legislations, however, stretch the idea that human visits to the area are intended to be short term (Hall et al., 2008).

As discussed earlier in Chapter Three, any concept of untouched wilderness is a political and cultural concept and, rarely—if ever, untouched, wild nature (Eidsvik, 1989; Lewis, 2007; Saarinen, 2019; Sæthórsdóttir et al., 2011; Vannini & Vannini, 2016). As presented in Figure 7 earlier, the areas surrounding Kilpisjärvi village are not part of the Käsivarsi Wilderness Area. However, tourism defines "wilderness" from its point of view (Saarinen, 2019); in the case of Kilpisjärvi, the border of the official Wilderness Area is often blurred (Hautala-Hirvioja, 2021; Rantala et al., 2018; Rantala, 2016; Tuulentie, 2004).

4.2.3 Kilpisjärvi tourism today

By the 2000s, the village had grown with several accommodation providers and over 20 Metsähallitus wilderness huts in the Käsivarsi area. Recent developments

include building two new hotels in 2021–2022, bringing the total available beds in Kilpisjärvi village to nearly 1000. In addition, there are over 200 caravan sites, approximately 100 holiday homes, and several popular wild camping sites around the village (Mannela, 2023). In addition, the new zoning plan in process for 2024 allows the building of several new accommodation buildings around the village, including even a free zone for motorized vehicles (Enontekiön kunta, 2024; Takkunen, 2024; Honkanen, 2021).

Tourism in Kilpisjärvi has been growing steadily alongside village accommodations and the Metsähallitus-managed nature destinations. In this section, I introduce some of the visitor data from Kilpisjärvi. In addition, Appendix 1 provides more detailed tourism statistics and some results of the Metsähallitus Visitor survey from 2019. Before 2015, the number of overnight visitors was under 30,000 yearly, and most of the accommodations were closed during winter. The numbers started to grow in 2015 after some companies opened for winter season (Matkailutilastot, 2010–2022). The COVID-19 pandemic did not impact Kilpisjärvi tourism growth much, as a high share—nearly 80%—of the visitors in Kilpisjärvi are domestic (Matkailutilastot, 2010–2022). After the pandemic, visitor levels have established themselves at around 90,000 overnight visits annually.

Today, the permanent residents—approximately 150 individuals (SVT, 2023)—and seasonal workers mostly work in tourism and related services. There are some jobs at the local school, Helsinki University research station, and the customs office at the Norwegian border; however, without the tourism industry, the village would have only a handful of university and customs staff (Häkkilä et al.,2010).

Metsähallitus Parks and Wildlife Finland conducted a visitor survey in 2019 on Kilpisjärvi village, the Käsivarsi Wilderness Area, and Reisa National Park and the Ráisduottarháldi Landscape Protection Area in Norway. The survey was done in collaboration with Norwegian partners in the Halti Interreg project and was one of the first to be established cross-border.[1] The survey demonstrates that the average age of visitors in the region is young, at 45 years old. Furthermore, the region's most popular age group for visitors is between 25 and 34 years old. Visitor survey in 2019, similarly to the one conducted in 2009 (Ohenoja & Leppänen, 2010), reported approximately 40% first-time visitors, a notably high proportion compared to similar regions in Finland. For instance, the two similar national parks have lower percentages of first-time visitors: 18% in Pallas-Ylläs (Latja, 2021) and 23% in Urho Kekkonen National Park (Kuusisto, 2018).

Kilpisjärvi attracts many kinds of visitors, from snowmobilers to those who seek to enjoy the quiet of the wilderness, which can sometimes lead to conflicts (Mäkitie & Ylisirniö, 2013; Tuulentie, 2004). In the visitor surveys of 2019 and 2010 (Ohenoja

1 The results have not been published, but I have been granted a permission to use them for this dissertation. I worked at the Halti project, and the visitor survey was one of my responsibilities.

& Leppänen, 2010), the problems visitors reported were related to disturbances caused by other visitors, mostly those using motorised vehicles.

The 2019 visitor survey illustrates that soft activities, such as walking, day hikes, and observing nature, are the main activities for visitors in the region. Fishing is also an important pursuit, and several fishing guide companies have recently been established in the region. In the2019 and 2010 visitor surveys (Ohenoja & Leppänen, 2010), nature is reported to the most important motivation for visiting Kilpisjärvi. Similarly, Rantala (2016) in her study of online travel narratives from Kilpisjärvi and the Käsivarsi Wilderness Area concludes that nature was indeed an important motivator for such visits. However, Rantala also notes that, while some texts she studied recommended that visitors observe the grandeur of nature, the relationship with nature was portrayed more as an activity or admiration-based relationship rather than one aimed at learning or studying.

The 2019 Metsähallitus visitor survey reveals that nearly 70% of visitors plan to share their trip on some social media platform. Facebook and Instagram were the most popular platforms, with 46% of the respondents saying they would share on Facebook and 37% on Instagram. While the age groups most active on social media were those under 50 years, it was only in the age group of over 61 years old that the majority did not plan on sharing anything on social media. Furthermore, women were slightly more active in posting on social media than men.

There are a few differences in the "visitation motives" between those who reported posting on social media and those who did not. Those posting on social media are more likely to appreciate exciting experiences and the possibility of visiting neighbouring countries on the same trip. Women who do not post on social media enjoy time alone more than others.

Some differences between those who share and those who do not can also be observed within the reported "most important activities." Direct conclusions about connectedness or causality between social media use and these differences should not be drawn; more extended research would be needed to see if similar differences appear in other visitor surveys.

4.3 Kilpisjärvi in contemporary tourism narratives and imageries

Saana became the centre of interest in tourism brochures in the 1950s, and from then on marketing materials for Lapland and Finland have used Saana's image. It remains one of the images most often presented in tourism promotion (Tuulentie, 2004). Saana's identifiable shape is portrayed in brochures, postcards, travel stickers, and badges. Nature around the village is highly valued, usually aesthetically. In their survey, Mäkitie and Ylisirniö (2013) recorded locals' views on new developments, which highlighted that any development should fit into the landscape and not

break up the scenery. Only a few locals mentioned concerns about nature's carrying capacity.

In 2017, Saana was one of the six sites where a light art installation, presented in Figure 11, celebrated the centennial of Finnish independence:

> "Since ancient times Saana has been a significant and a sacred place for Finns and all peoples in the North. The artwork highlights concretely the fact that the centennial of Finnish Independence is celebrated everywhere in Finland, also in the scarcely populated areas. By Saana artwork I specifically wish to draw attention to Finland's unique nature. As one distinguished feature, it must be one of the most precious elements in Finland to us Finns. Mighty and mystical Saana is a very special place for me personally, and I have trekked in the wilderness of the fells from a very early age," says Light Artist Kari Kola. (Kola, 2017)

Figure 11 Saana during the Luminous Finland 100 light installation in 2017. Image taken from Salmivaara towards Saana © Gareth Hutton, 2017.

Tourism narratives often describe Kilpisjärvi and its surroundings as wilderness, following contemporary wilderness tourism. When an area is labelled as wilderness in a visitor's mind, certain expectations come with it. Tourism marketing intentionally creates some of these labels, while others are unintentionally created in travel narratives (Saarinen, 2004). Tuulentie (2004) studied the nature concepts of

Kilpisjärvi visitors and locals, pointing out how touristic nature often ignores local inhabitants and their everyday lives. This touristic nature in Kilpisjärvi, according to Tuulentie's interviewees, is wilderness without people. Similarly, in a study of travel blogs by Rantala (2016), the Käsivarsi Wilderness Area is a destination for "conquering." According to Rantala, blogs highlight the unique possibilities of being in touch with such spectacular nature. The narratives reveal, however, outdoor practices with a focus on seeing the place rather than enforcing a relationship with nature.

It is not only the tourism industry that defines *erämaa* (wilderness) as a wild area instead of a place for hunting, gathering, and fishing. *Suomen Luonto*, the magazine published by the Finnish Association for Nature Conservation, published an article in 2016 identifying "the most wilderness-like place in Finland" (*Suomen erämaisin paikka*), which was calculated by its remoteness from any roads, including ATV trails, and was located inside the Käsivarsi Wilderness Area (Tikkanen, 2016).

Tourism thrives in beautiful nature destinations, making protected areas and wilderness landscapes valuable assets for the tourism sector's development. Destinations like Kilpisjärvi are prime locations for nature-based tourism due to their scenic appeal and diverse outdoor recreational opportunities. Furthermore, Kilpisjärvi has a special place in the Finnish landscape thanks to its unique geographical and ecological features and socio-cultural tourism history. The most recent zoning plans confirm that the municipality strongly supports the industry's growth in Kilpisjärvi. This growth will place more pressure on nature through increased infrastructure and visitation (Honkanen, 2021). To preserve the nature that attracts visitors, visitor management in Kilpisjärvi will need new ways of understanding visitor values and of monitoring visitor mobilities at the destination.

Sámi traditions have nearly vanished from the public image of the village, overshadowed by management narratives that seem to have abandoned their Sámi roots in favour of colonial master narratives (Heikkinen, 2021). However, as Heikkinen (2021) points out, there is a glimmer of progress as Sámi culture becomes more visible in the village than ever before, thanks to the efforts of several Sámi entrepreneurs actively promoting it today.

In the forthcoming chapters, I will study the representations of nature in social media posts about Kilpisjärvi from the summer of 2019 with quantitative and spatial analyses supported by netnographic observations.

5 Using social media for tourism and visitor monitoring research

5.1 Social media content as research data in social sciences

The term "social media" was first used in 1994 in Tokyo to describe an internet-based application (Aichner et al., 2021). During the thirty years of its existence, social media has intrigued developers, users, and researchers in exponentially growing numbers. In the time I have been working on this study, a humbling number of more than a billion new users have joined social media. In January 2019, when I began this project, there were under four billion daily social media users globally (Kemp, 2019); their number reached 5.04 billion in January 2024.

The most popular social media platforms globally in 2024, ranging from just over one to more than three billion users each, are Facebook, WhatsApp, YouTube, Instagram, WeChat, and TikTok (Oladipo, 2024), while in 2019, the most popular five platforms were Facebook, YouTube, WhatsApp, Instagram, and Twitter (Ifran, 2019). At the beginning of 2024 in Finland, WhatsApp (3.6 M), Facebook (3.2 M), and YouTube (3.1 M) were the most popular platforms, followed by Instagram (2.4 M) and TikTok (1.3 M users) (Pönkä, 2024). The most notable changes in social media use during the research process are the drop in popularity of Twitter (now X) and the rise of the Chinese WeChat and TikTok.

The most studied platforms in tourism research are Facebook, YouTube, WhatsApp, Instagram, Twitter, and TikTok, which are the most popular online platforms in Europe and the Americas (Heikinheimo, 2017; Leung et al., 2013; Teles da Mota & Pickering, 2020; H. Zhang et al., 2022). Each social media platform attracts different users (Mkono & Tribe, 2017). While X (formerly Twitter) is primarily text-based content, Instagram posts are images, and text is a complementing element. Facebook content differs from these platforms because it allows and invites users to write more text and use images alongside it (Tenkanen et al., 2017). Web-share platforms, such as Strava activity-sharing media, feature content uploaded directly from activity tracker systems, sometimes enhanced with photos and notes (Lee & Sener, 2021). Social media platforms are also popular places for marketing and business-to-customer interactions (Aichner et al., 2021).

In the early stages of social media, social scientists insisted that the virtual environment is separate from the offline world (Baker, 2013; Cavanagh, 2007; Hine, 2020). They saw the internet as a place to escape the natural world and its problems. Soon, however, it was recognised that online groups could form communities joined by a common interest, regardless of members' physical locations and communication

technology. The concept of virtual communities has now been well established in the research (Bateman et al., 2006; Muniz et al., 2001; Shukla et al., 2018). Furthermore, research has noted that online communities have strong social and structural dynamics that distinguish them from other groups (Ridings & Wasko, 2010). We carry mobile phones with cameras and automated photo editing tools everywhere, and internet access is available in most places we visit. Consequently, many researchers agree that the online world has become such an integral part of our everyday lives that it is not meaningful to treat it as an isolated place (Baker, 2013; Smith, 2018).

Social media's use as a data source for tourism research has increased following the general acceptance of social media in research (Barros et al., 2022; Cheung et al., 2011; Wilkins et al., 2020; H. Zhang et al., 2022). Social media data has been used predominantly by marketers and consumer researchers to understand consumer behaviour, forecast future trends, and organise (Kapoor et al., 2018). For a long time, tourism research on social media focused on consumer and industry practices (Leung et al., 2013; X. Liu, 2020; Mkono et al., 2017). The online version of word of mouth, eWoM, and customer review platforms like TripAdvisor take up a large share of early research focus (W. Lu et al., 2015; Mkono et al., 2017). Scholars have focused on online networks and dynamics, while the content of the posts themselves was of lesser interest until recently (Smith, 2019). The use of the internet and social media has altered the way we engage with the outdoors and thus would provide scientists with a wealth of data (Wilkins et al., 2022); therefore, I find it surprising that the usefulness of social media for visitor monitoring and management has been recognised only recently.

Gathering data generated by visitors of their own accord rather than depending on surveys and interviews allows for novel insights into their preferences (Connors et al., 2012). Social media platforms are digital meeting places where members exchange information through images, text, reactions, and geolocated markings, cocreating values related to the theme, for example, of the nature tourism destination (Calcagni et al., 2019). Drawing on Kenter (2015), Calcagni et al. claim that landscape aesthetic values are indeed negotiated on social media among digital community members. I argue that this underscores the importance of further research to understand how social media influences tourist behaviour, particularly their interactions with nature when visiting protected areas.

5.2 Social media in research for visitor monitoring and management

Along with a new acknowledgement of the social and environmental effects of urban green spaces on well-being, there has been an increasing focus on the functionality of recreational areas within cities worldwide (Kabisch et al., 2015). Urban green spaces often have uninterrupted internet access and attract large numbers of users. As a

result, social media platforms contain numerous posts from these areas, allowing for quantitative studies using Big Data (Cui et al., 2021; Ilieva et al., 2018; Niță et al., 2021; Song et al., 2020). Consequently, many of the new research methods utilising social media data for visitor monitoring were initially applied to urban environments (Lee & Sener, 2021; Zabelskyte et al., 2022). Different tools provide different information, including aspects such as park usage, appreciation, the rhythms of movements, and visitor motivations or activities (Heikinheimo et al., 2020). Researchers have used social media to study visitor flows in urban parks and green areas (Cui et al., 2021; Niță et al., 2021), spatial differences in the use of green areas (Chang et al., 2022; Cui et al., 2021), aesthetic values (Oku et al., 2006; Schirpke et al., 2019; Tieskens et al., 2018), and even human–environment interactions at urban parks (Song et al., 2020). Despite concerns about the representativeness of social media data, research has concluded that it can be used as an indicator for urban park visitations. For instance, Hamstead and colleagues (2018) found that, when analysing New York City parks, geolocated social media data proved to be reliable. This data effectively highlighted variations in park usage across all NYC parks and also pinpointed differences between areas with varying ethnic majorities or access to public transportation. In a similar study from parks in Helsinki, Finland, Heikinheimo et al. (2020) concluded that while social media data indeed allows for more in-depth content analysis, the best results are gained when data is combined from various user-generated content sources such as social media, sports tracking platforms like Strava, and mobile phone data. Parks in Helsinki and New York City differ significantly in user numbers, leading to subsequent differences in the volume in the available social media data. Therefore, more research is needed to understand if in less frequented destinations, the integration of multiple data sources could substantially improve the accuracy of results.

Research in urban green areas has shown that social media data provides a resource-efficient means of collecting large volumes of visitation data (Barros et al., 2020; Calcagni et al., 2019; Ghermandi et al., 2019). The rising popularity of nature tourism and recreation and the consequent need for new visitor monitoring tools in national parks and wilderness areas has inspired researchers to study the usability of the ever-growing user-generated content on social media (Barry, 2014; Dunkel, 2015; Ilieva et al., 2018; Di Minin et al., 2015; Song et al., 2020).

There were only a handful of peer-reviewed articles available related to social media use for visitor monitoring research in 2019 when I started this research project. Since then, social media has been tested and developed globally as potentially cost-effective tool for visitor monitoring and management (Heikinheimo et al., 2022; Johnson et al., 2021; Wood et al., 2020). Nevertheless, using social media data for studying visitors to protected recreational areas is a relatively new research area (I. Arts et al., 2021b; Cui et al., 2021; Hausmann et al., 2018; Di Minin et al., 2015; Teles da Mota et al., 2020; Tenkanen et al., 2017).

Table 1 Research literature on usability of social media is increasing fast.

Authors	Tittle of the paper	Publication year and number of publications reviewed											
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Li et al., 2023	Research in user-generated photos in tourism and hospitality: A systematic review and way forward	3	6	9	12	20	25	31	43	59	83	106	
Barros et al., 2022	Geotagged data from social media in visitor monitoring of protected areas; a scoping review				2		3	3	6	7	11	6	
Lv et al., 2022	A look back and a leap forward: a review and synthesis of big data and artificial intelligence literature in hospitality and tourism.	1	3	5	4	7	10	19	31	44	64	71	
Rahmadian et al., 2022	A systematic literature review on the use of big data for sustainable tourism.	2	5	2	7	5	8	17	25	36	36		
Zabelskyte et al., 2022	Patterns of urban green space use applying social media data: A systematic literature review.								2	5	3	7	5
Cui et al., 2021	Geo-information using VGI and social media data to understand urban green space: A narrative literature review.		4	4	7	9	10	15	22	30	37	38	
Marsinghe et al., 2020	Computer vision applications for urban planning: a systematic review of opportunities and constraints.			2	1	4	3	6	10	22	26	13	
Wilkins et al., 2020	Uses and limitations of social media to unform visitor use management in parks and protected areas: A systematic review.				2	4	2	3	8	11	17	14	
	Total number of reviewed articles in mentioned literature reviews	6	18	22	35	49	61	94	147	214	277	255	5*

* Due to the publishing schedules, articles published after 2020 have not been available for these reviews. Consequently, the observed decline in publication numbers should not be interpreted as an actual decrease but rather as a bias introduced by the extended publication timelines.

Since 2019, research journals have published a growing number of peer-reviewed articles concerning the use of social media for visitor monitoring. Table 1 displays the yearly quantity of published articles within literature review papers that incorporated this information. While the list is not an exhaustive list of literature reviews, it offers a good indication of the development. Social media research done for visitor monitoring and management is a relatively small field within

tourism research that utilises social media. Numerous literature reviews provide a comprehensive overview of data collection methods, analysis techniques, and the scope of recent research in the field (see, for example, Barros et al., 2022; Cui et al., 2021; Ghermandy et al., 2023; Lee & Sener, 2021; Rahmadian et al., 2022; Wilkins et al., 2020; H. Zhang et al., 2022).

The first studies on the application of social media for visitor monitoring explored quantifying nature-based tourism (Tenkanen et al., 2017; Wood, 2013; Wood et al., 2020). In contrast to traditional surveys and visitor counters, which offer local visitor data, social media facilitates comparative studies by leveraging data from around the world and granting access to information about visitor preferences on a global scale (Wood, 2013). For example, Tenkanen et al. (2017) studied social media activity related to 56 national parks in Finland and South Africa in 2014 to compare the usability of social media against detailed local visitor monitoring data. They conclude that, while limitations exist, which I will discuss in a later section, social media corresponds well with real-life events and visitation levels in the parks, something that other researchers have gone on to agree with (see Barros et al., 2022). Early studies note that higher visitation rates, and thus more social media posts, best mirrored real-world events. This aspect makes the current research stand out, as it offers insights into the potential applicability of social media data in less-visited areas, which is very yet very little researched.

In addition to quantifying and understanding spatial visitor behaviour, social media enables a new way to study the aesthetic landscape preferences of visitors to nature destinations (Figueroa-Alfaro et al., 2017; Hausmann et al., 2018; Di Minin et al., 2015). Cultural ecosystems services (CES) are the non-material benefits people gain from interactions with their natural environment. CES are a widely studied topic in tourism research, including within the field that uses social media as a data source (Chang et al., 2022; Dunkel, 2015; Ghermandi et al., 2022; Richards et al., 2022; Smith, 2021; Tieskens et al., 2018; van Zanten et al., 2016). One possible CES value is the aesthetic enjoyment of landscapes and destinations (Baker, 2013; Barros et al., 2022; Heikinheimo, 2017; Kapoor et al., 2018; Teles et al., 2020). Given that CES result from interaction with nature, studies on aesthetic landscape preferences consider the human–nature relationship by exploring the visual partialities.

Several research articles have studied visitor landscape preferences on social media. Photos shared on these platforms reveal insights into what attracted the visitor to the destination (Balomenou et al., 2019; C. Liu, 2022; Schwartz et al., 2021; Sontag, 2005). Studies have concluded that wilderness, unbuilt landscapes, landscapes with water, and mountainscapes (Oteros-Rozas et al., 2018; Schirpke et al., 2016; Tieskens et al., 2018; Van Berkel et al., 2018; van Zanten et al., 2016) are the most popular type of recreational landscapes according to social media posts. In their Flickr analysis of images from the English Yorkshire Dales National Park,

Gosal and Ziv (2020) find that mountains and streams positively impact perceived landscape aesthetics. In contrast, fewer images of fields, farms, and grasslands were shared.

On the other hand, New Zealand is a renowned adventure tourism destination that attracts heterogeneous tourist groups worldwide. In their study of Flickr images, Richards and Lavorel (2022) state that the high ratio of images from the New Zealand coastline and mountainous regions reflects these same findings. Richards and Lavorel (2022) further conclude that although accessibility is an important determinant of what places become popular destinations, the landscape preference for ocean and mountain views seems to be a global phenomenon. They employ social media to understand the impact of the restoration of native New Zealand forests in the landscape, and conclude that restoration has a mostly positive impact, particularly in areas with higher population density.

Callau et al. (2019) feature Wikiloc images from the Ebro Delta in Spain in another image analysis study of landscape preferences. They find that over 40% of visitor images were of natural landscapes, whilst only 24% of the area was in a natural state. Furthermore, images of beaches and sand dunes were the most photographed nature type, despite only being visible in a one-kilometre strip in the delta. There was also a notable concentration of images taken of the lagoons (21% of images) and the Ebro River (22%), which cover only 8% and 2% of the entire delta region respectively. Referring to similar findings in other studies, they state that social media images portray a visitor preference towards natural landscapes. They further highlight that those areas with visible bodies of water became popular landscapes. Considering such a clear tourist preference towards natural landscapes, I see a paradox here, in that in their data, they found that only 0.38% of images contained elements of spoiled or destroyed nature, despite the park managers being aware of several issues in the delta and its degradation, especially around popular picnic sites. The researchers—rightly, in my view—conclude that people and their impact are often framed in the photographs.

Other studies have reached similar findings; Donaire et al. (2014), in their study of Flickr images from the Boí Valley, Spain, point out that tourists shared more images of cultural heritage sites (94%) and nature (64%) compared to services (18%) or living culture (6%), and most photographs (54%) had no people or only portrayed a tourist (30%). They highlight that the Boí Valley is a popular destination, with a high density of tourists and services for them. Similarly, H. Lee et al. (2019), through data analysis of Flickr images from the Mulde river basin in Saxony, Germany, discuss how nearly 75% of the photos had no people, while outdoors (68%), nature (50%), and landscape (49%) photos were the most shared content.

Furthermore, the extensive volume of data collected from social media enables assessing quantitative correlations between physical landscape attributes and crowdsourced visitor landscape preferences (Tieskens et al., 2018). For example,

Schirpke and colleagues (2016) studied the comparability of social media landscape preferences to those reported in a face-to-face, photo-based survey along the mountain paths of the Ötztal Valley (Austria). They identified social media landscape preferences by calculating the photograph density of each observer point in the research area. These social media hot spots were then compared to the landscape preferences reported in the interviews. The researchers conclude that the photo density was the highest in the same ecoregions. These high alpine grasslands were identified as having the highest aesthetic value in the survey. Similarly, their report states that the lowest values in both survey methods corresponded with low-altitude forests.

The aforementioned studies share a common limitation. While they suggest that certain landscape types are globally more prevalent in social media images, they lack a deeper analysis of the underlying reasons. It remains unclear whether this trend is driven by the aesthetic appeal of these landscapes in images, social norms around what should be shared on social media, or the influences that shape such norms. For instance, Donaire et al. (2014) found that cultural heritage images dominated their dataset, reflecting the nature of the cultural heritage destination they studied. Similarly, the focus on mountains and oceans in other studies may simply mirror the characteristics of the destinations analysed. More than a purely quantitative approach is required to capture these nuances; integrating qualitative analysis would provide more insightful results.

Geotagged social media posts can also be used to gain insights into visitor mobility, which can be used, for example, to identify the need for the development of trails and other services (C. Chen et al., 2017; Levin et al., 2015; Sonter et al., 2016). Using Flickr image analysis, Wilkins et al. (2021) compared visitor mobilities in 110 national parks in the US to weather data. They found no consistent trend in how the weather impacts visitor behaviour across the parks; temperature and precipitation impacted each park independently. They propose that understanding differing weather-related behaviour in parks not only informs staff about the needs related to existing infrastructure but also provides indications of how climate change might affect nature tourism behaviours in the future (Wilkins et al., 2021).

In addition to geotagged social media posts, GPS-based activity data from online platforms, such as MapMyFitness, Strava, or Wikiloc, is used to identify the spatial division of recreational and active nature tourism (Campelo et al., 2016; Goodbody et al., 2021; Norman et al., 2019; Norman & Pickering, 2019). In their extensive literature review, Lee and Sener (2021) relate that Strava Metro is successfully used to identify travel patterns, popular routes, or peak times. Moreover, research combining spatial mobility patterns with natural value data is particularly beneficial for visitor monitoring and management, as it helps scientists to understand the pressure on biodiversity caused by nature tourism.

Social media is not only beneficial for conservation efforts. When there is a surge in human activities in a particular area, it can disrupt wildlife and plants, even if the visitors are not specifically there to observe or interact with them (Bergman et al., 2022). Goodbody and colleagues (2021) researched west-central Alberta, Canada to map tourism mobilities in the grizzly bear (*ursus arctos*) management area. They combined recreation and tourism likelihood maps created based on geolocated social media data with telemetry data from grizzly bear observations, concluding that the method was suitable for estimating tourism disturbances for wildlife. Similarly, mapping wildlife sightings can be used in conservation efforts (di Minin et al., 2015, 2019; Pagel et al., 2020). Understanding the wildlife attitudes of social media users can be used to plan guidelines and communication for tourists potentially interacting with said wildlife (Papafitsoros et al., 2021).

When social media platforms turn shared images into consumables or currency to gain recognition, there is also the risk that images of wildlife or rare species are used for this purpose (Hall, 2020; H. Liu et al., 2018; Smith, 2018). Bergman et al. (2022), in their literature and website review on the application of social media for conservation actions, note that social media communications had no impact on conservation efforts. Nevertheless, they also conclude that with improved communication and online presence, conservation management can indeed use social media platforms to their benefit.

To summarise, research recognises social media as an up-to-date and nearly real-time source of information (Fisher et al., 2018; Grzyb et al., 2021; Norman et al., 2019b; Zabelskyte et al., 2022); it is also cost-effective (Norman et al., 2017; Oteros-Rozas et al., 2018) and accessible from any location (Levin et al., 2015; Liang et al., 2020). The usability of social media data in understanding the visitor landscape preferences or CES of a destination is evident. Identifying these preferences can help conservation and visitor management strategies prioritise and protect the CES that visitors value most and that are consequently under the most pressure from human impact.

Furthermore, scholars have concluded that the method provides valuable information to visitor management and nature protection staff, especially when the data is collected from various sources. Results obtained from social media can be subject to biases stemming from demographic differences among users, as well as limitations inherent in data collection and analysis methods. Therefore, combining social media data with other visitor data, such as Public Participation Geographic Information System (PPGIS), sports tracking platforms, or visitor surveys, offers more reliable results. (García-Palomares et al., 2015; Heikinheimo et al., 2020; Muñoz et al., 2020). However, visitor management has yet to adopt these novel visitor monitoring methods (Teles da Mota & Pickering, 2020). s

5.3 Monitoring changes through social media

Tourism-related social media content is also used track human mobility and the distribution of other species. ElQadi et al. (2017) conducted a study to map two types of pollinators and blossoming flowers in Australia. They used data from Flickr and rudimentary image analysis to identify the species. The authors conclude that improvements in automated image analysis will make similar analyses more efficient in the future. However, they also state that mapping species from tourist images can be helpful for species distribution studies. In addition to image analysis, the primary limitation they encountered was the collection of images. They observe that many amateur photographers do not label the photograph metadata with the correct species name (ElQadi et al., 2017). More recently, Costadone and Balzan (2023) compared Flickr and data from the citizen science social media platform iNaturalist in the Maltese archipelago, finding that due to these limitations on general social media sites such as Flickr, sites like iNaturalist can be better sources of crowdsourced environmental data. Such data can be used to plan conservation communication (Teles da Mota & Pickering, 2020) or recognise the need for new conservation actions (Ghermandi et al., 2020).

One of the strengths of using social media platforms for this purpose is their access to a long timeline of data, allowing studies to be conducted on past events as they were experienced and shared to social media at the time. For example, Provenzano and colleagues (2018) studied the mobility of tourists in Europe by comparing official travel statistics with data from Twitter in 2012. The findings of their pioneering study suggest that Twitter data analysis confirms many results of the network analysis of travel statistics. In addition, they find that Twitter data might reveal travel patterns that escape the official tourism statistics due to travel patterns that official statistics cannot monitor, such as overnights in unregistered accommodations. A much more recent study by Wallin Aagesen et al. (2023) observes Nordic cross-border mobility, also using data from Twitter. They consider the changes in cross-border mobility patterns following the national travel restrictions during the pandemic, finding regional variations. While border crossings decreased during the observation period in most places, the border between northern Finland and Norway saw a notable increase in the summer of 2020 when Finland allowed travel to Norway right at the start of the summer holiday season. Based on their study, the authors assert that social media is indeed an effective tool to monitor long-term mobility patterns and observe rapid changes in a timely manner.

Access to data produced over a long period of time means that social media can be successfully implemented in monitoring rapid changes in visitations (Becken et al., 2017; Y. Lu et al., 2021; Niță et al., 2021; Volenec et al., 2021). The global disruption caused by the COVID-19 pandemic significantly impacted travel patterns, making it an opportune period to explore the potential for monitoring

changes in the use of recreational and green urban areas (Grzyb et al., 2021; Y. Lu et al., 2021; Niță et al., 2021; Volenec et al., 2021). For example, Hardt and Glückstad (2024) tracked changes in expressed travel preferences and attitudes during the pandemic with data collected from Reddit and analysed using the natural language processing (NLP) technique. While they conclude that their findings are useful for tourism marketing, I consider their work equally relevant for visitor management. Their research reveals that, alongside an overall increase in interest towards nature destinations and a decrease in city tourism, there were regional variations in the strength of these changes. Moreover, they were able to monitor increased awareness of risks among travellers after the start of the pandemic, especially among those who were previously more adventurous in their travels (Hardt & Glückstad, 2024).

The few studies that have attempted to identify differences between the social media posts of residents and domestic and international tourists have documented variances in these groups (Muñoz et al., 2019). Residents tend to post from a larger area, whereas tourist posts are more concentrated in recognised tourist hotspots (García-Palomares et al., 2015; Ghermandi et al., 2020). Ghermandi et al. (2020) also identify that resident visitors to a conservation area posted more images of birds and the bird sanctuary than visitors, who primarily share images of the cultural heritage sites in the same area. Studying the difference between residents and visitors is challenging due to privacy issues when using social media data (Heikinheimo et al., 2022), and often other methods, such as PPGIS, are used instead (Stahl Olafsson et al., 2022; Tolvanen et al., 2020; Törn et al., 2008). In tourism research, it is important to note that visitors are often more active on social media than the residents (Edwards et al., 2017; Muñoz et al., 2019) and share different kinds of content (Ghermandi et al., 2020).

5.4 Data collection methods for using social media in visitor monitoring

Several data collection methods have been developed to employ social media as a data source for visitor monitoring (Xu et al., 2020). Manual collection of social media data is easy, but it is slow, tedious, and not scalable for large visitor monitoring projects. Issues related to the privacy of social media users must be considered carefully when the researcher collects data manually. That said, social scientists often use manual collection to gain qualitative insights (Y. Chen et al., 2023).

The most common data collection method is using application programming interfaces (API) provided by social media platforms, which allow researchers to access specific data related to visitor activities, posts, or user profiles (Wilkins et al., 2021). APIs are software developed specifically to access data. They either continuously stream the data or utilise the REST (REpresentational State Transfer)

interface, which mines data from a specific period, past or present. However, some platforms restrict the use of APIs. For example, Facebook Inc. (after 2021, Meta Platforms Inc.) suddenly forbid using third-party APIs on both Instagram and Facebook at the end of 2018. Before employing APIs or similar tools, it is essential to clarify what the platforms' Terms of Service state about downloading, using, and storing material collected from the site (Toivonen et al., 2019).

APIs also require special computing skills, which might may put social scientists at a disadvantage compared to others in the field (Y. Chen et al., 2023). In addition, in a study by Mangold et al. (2024), 69% of park managers said they lacked the technical skills to exploit the full potential of digital tools for visitor monitoring and management. In this light, I conclude that research enabling the development of accessible tools and efforts to inform industry representatives of them is one of the most important next steps for the field. The current study works with a commercial computer vision program to analyse images through collaboration with local visitor management authorities who, in 2019, lacked in-house skills for analysis during the initial data collection and analysis phases.

The variety of data collection methods in the literature highlights the relative immaturity of this research field. The lack of consensus on standardised data collection approaches, coupled with platforms' restrictions on and control over data collection methods, complicates the comparability of studies. Similarly, no uniform standards exist for sampling decisions. While some qualitative studies randomly sample geolocated posts, others focus on a subset of the most popular geolocated posts. These differing sampling strategies can yield markedly different results, as the popularity of social media images is influenced not only by their content but also by platform algorithms, which determine, for example, the visibility of the images.

5.5 Analysis methods for social media data and examples of their use

5.5.1 Text analysis

Social scientists using social media as a data source have focused on studying text and image metadata, such as locations, rather than image content analysis (Y. Chen et al., 2023). For example, sentiment analysis of social media content uses Natural Language Processing (NLP)—that is, the automated analysis of a spoken or written language—to detect and interpret opinions from a text and to classify them, typically into positive, negative, and neutral sentiments (Drus et al., 2019; Yue et al., 2019). These sentiments can help scholars understand people's attitudes and emotions towards the researched phenomena. Väisänen and colleagues (2021) deploy sentiment analysis of social media images to study human–nature interactions in national parks. They take a lexicon-based approach, meaning that

negative, positive, and basic emotions are detected from the text based on a predetermined lexicon. The resulting data allows for complex quantitative analyses and, as stated by the researchers, can isolate what the images shared on social media mean for the visitors.

On the other hand, qualitative content analysis considers the social context in which the text was produced (Graneheim et al., 2017). It focuses more on questions of why and how than quantifying words and themes, and it enables researchers to interpret the meaning behind the captions, consider context, and capture the subtleties of language use. In the inductive qualitative content analysis process, the researcher initially reads the text to discern emerging patterns. These patterns are initially encoded manually or through qualitative analysis programs such as Atlas.ti or nVivo into words or numbers (Choe et al., 2022), and through multiple iterations of reading and analysis, these themes are subsequently organised into categories (Graneheim et al., 2017) or networks visualising connections. These categories are then examined using the theoretical framework guiding the study, which helps to enhance the understanding and interpretation of the data. Quantitative text analysis can be laborious and time consuming.

5.5.2 Geotagged social media data

Researchers leverage various GIS analysis tools like ArcGIS and QGIS in conjunction with social media data for visitor monitoring. These tools facilitate mapping social media post locations and visualising visitor activities and the geographical distributions of events or sentiments. Hotspot analysis identifies areas with high visitor concentrations or social media activity, aiding in recognising popular attractions or visitor hotspots (García-Palomares et al., 2015). Visitor monitoring and management research often applies hotspot analysis to identify the most visited locations at a destination.

These hotspots can be overlaid with landscape data to study visitor landscape preferences. Overlay analysis combines geospatial data layers, such as social media activity and natural values maps (Huertas Herrera et al., 2023; Martinez-Harms et al., 2018), to yield comprehensive insights. By integrating social media data spatially, GIS-based tools deepen comprehension of visitor behaviour and preferences (McKitrick et al., 2022).

In addition, researchers can use a viewshed analysis to map areas visible from a given location (Yang et al., 2024). The viewshed analysis has several uses in academic research, but it is also a practical tool for land use planning, allowing such work as assessing the visual impact of wind-power plans (Inglis et al., 2022; Möller, 2006). Visitor management can use viewshed analysis to identify the combination of locations along a nature trail that provides the most comprehensive views. They can further use these results to space out rest stops or locate informational posts to create a trail with varied views, thus increasing visitor satisfaction (da Silva et al., 2020).

Derrien et al. (2024) lean on overlay analysis in a study examining nearly 70,000 online trip reports within the Mt. Baker-Snoqualmie National Forest, Washington, aiming to determine the elements contributing to a wilderness experience for visitors. Given the profound influence of the US Wilderness Act of 1964 on the perception of recreational wilderness environments, the researchers isolate qualities such as aesthetics, awe, challenge, pristineness, quietness, solitude, and timelessness reported on these trips. They investigate the relationship between perceived wilderness and various environmental factors, including trail infrastructure, terrain features, and social contexts, overlaying these qualities with GIS analysis of landscape characteristics. Their findings suggest that beyond legal designations of wilderness areas, the experience of wilderness qualities correlates closely with physical attributes, like trail length and steepness. Consequently, the authors recommend that, in management and tourism promotion planning, greater consideration should be given to considering how specific physical features influence aspects such as awe and aesthetics in the wilderness experience (Derrien et al., 2024).

Other researchers, such as Zoderer et al. (2020), have proposed similar recommendations. They conducted a study on perceived wilderness experiences in South Tyrol, Italy, through interviews and surveys, and they subsequently mapped these experiences, overlaying them with the region's biological and geological characteristics to understand which features contribute to the experience of wilderness. Drawing from their results, the authors advocate for a participatory approach and public engagement in wilderness management.

The method used to collect the data on the visitor experiences can impact the study. For example, Muñoz et al. (2020) conclude that, while social media data is helpful for broad overviews of preferences, survey methods like PPGIS will provide more detailed information. In their study, they compared Flickr images with the results of the PPGIS survey in southern Norway, covering several popular protected areas. They found that the spatial distribution of the data was very different. Flickr data was concentrated nearer to roads and other infrastructures, while the PPGIS survey provided more data from within the protected areas. Others have made similar suggestions; for example, Costadone and Balzan (2023) studied visitor preferences in Malta with Flickr and the iNaturalist site. They found significant differences between the spatial distribution of the data from the two sites, concluding that using two different sources can complement each other and strengthen research outputs (Costadone & Balzan, 2023).

Sobala et al. (2020) used viewshed analysis to study how deforestation impacts the landscape value of a touristic region in the Western Carpathians. In Iceland, Ólafsdóttir and Runnström (2011) with the same technique mapped Icelandic locations without human-made structures in sight, a popular definition of wilderness. They were able to find that, while sadly such wilderness locations in Iceland are decreasing, the viewshed analysis, which considers topographic features, was a

better tool than simply calculating distance-based buffer zones from anthropogenic sources (Ólafsdóttir & Runnström, 2011).

Geolocated social media data is widely turned to for various GIS analyses, and viewshed analyses are used to study landscape preferences. That said, these two techniques are rarely combined in the current literature (Fox et al., 2022; Yang et al., 2024). Combining the viewshed analysis with other landscape attributes, such as terrain and land cover type, allows for a more complex breakdown of what is viewable at the location—in other words, it forms viewscapes (Inglis et al., 2022). An often-employed database for land cover type is CORINE Land Cover (CLC), a European mapping project initiated by the European Environment Agency (EEA). It provides standardised information on land cover across Europe categorised into 44 classes, such as urban areas, forests, agricultural areas, wetlands, and water bodies. Various fields, including environmental monitoring, biodiversity conservation, climate change research, and urban planning, work with CLC data (EEA, 2023).

Fox et al. (2022) combine social media data, viewshed analysis, and CLC data. With geolocated Flickr data, they identify the preferred view locations of visitors to the UNESCO Global Geopark in Cyprus. After running a viewshed analysis of these locations, they overlay the results with CLC information to understand which landscape characteristics provide aesthetic value to the park visitors. In addition to typically highly valued cultural ecosystem services, such as forest landscapes, geodiversity and human-altered landscapes, such as vineyards, were included in the most appreciated landscapes by the visitors. These preferred landscapes were not the most predominant in the park. The authors highlight that understanding these visitor landscape preferences can help park managers safeguard the integrity of such landscapes. Similar findings have been made by other researchers, such as Karasov and colleagues (2020a), in their study of a Portuguese national park comparing a landscape coherence model to the viewshed analysis of social media data. They discovered that the most diverse areas overlap with the viewsheds of the most popular social media spots. These scholars conclude that their results could be applied to landscape management.

5.5.3 Artificial intelligence-aided image analysis

Developing research on social media image analysis can bring more insights than mere text analysis. Studying the interpretations of images and the meanings attached to them, or even what has been framed by the images, may provide unique value and insights (Y. Chen et al., 2023). Advancements in artificial intelligence, particularly in computer vision and machine learning, have facilitated the analysis of vast amounts of data (Peng et al., 2023). Computer vision is the technology and methods used to provide imaging-based automatic inspection and analysis (Ghermandi et al., 2022). Machine learning is a branch of artificial intelligence focused on creating statistical

models, of for example cultural ecosystem services, without explicit programming (Richards & Lavorel, 2022). These advancements enable researchers to train the program to search for specific elements within the images. The program can learn to recognise patterns, objects, or features of interest within the visual content through machine learning algorithms. This capability empowers researchers to extract relevant information efficiently and effectively from large volumes of image data, enhancing the utility of social media for visitor monitoring purposes (Wilkins et al., 2022).

Tourism and hospitality research using social media data sped up with the development of artificial intelligence and its applications, especially after 2015 (H. Li et al., 2023; Nusair, 2020); within visitor monitoring and management, it expanded after 2017 (Y. Chen et al., 2023; Ghermandi et al., 2019; Wilkins et al., 2020). In this section, I will outline some of the developments that have helped with the planning and execution of the research at hand and discuss some methodological variations within the field.

In tourism management research, especially in fields related to consumer and marketing studies, as Lv et al. (2022) point out, machine learning has been used to forecast arrivals, sentiment classification, visitor behaviour, and demand more and more since 2015. Similarly, recent studies in visitor monitoring have increasingly turned to artificial intelligence and its applications, such as computer vision for automated image content analysis (Callau et al., 2019; Ghermandi et al., 2022). Researchers also use computer vision to label images with tags and cluster these tags based on themes for further analysis (Ghermandi et al., 2022).

Quantitative data analysis methods for social media data in visitor monitoring often utilise machine-learning algorithms, such as clustering and classification, to identify patterns and segments within the data. Statistical analysis of Big Data is primarily used to support decision-making based on quantified information concerning land use (Calcagni et al., 2019; Ilieva et al., 2018; Kim et al., 2019). These examples often depart from a quantitative data analysis of visitation numbers, post amounts, or thematic analyses of popular locations or photo themes. Software used to analyse the data includes R, Python, SPSS, and Excel, as well as ArcGIS and QGIS for spatial analysis (Wilkins et al., 2022).

Researchers increasingly employ artificial intelligence (AI) in image analyses to streamline and enhance image recognition and interpretation (Lv et al., 2022). AI enables the swift and scalable processing of large volumes of images with varying degrees of complexity, excelling in recognising patterns, categorising objects, and discerning subtle details that may elude human observation (Marasinghe et al., 2024). The development of AI technology has resulted in the possibility of performing complex image analyses in research, including tourism studies (Ghermandi et al., 2022). However promising the first experiences have been, though, the tools come with new uncertainties. Ghermandi and colleagues (2022) compare commercial

computer vision results of the same data sample. They find that selecting an analysis programme can have a considerable impact on the study results. In addition, they note that some algorithms performed better in certain tasks. Therefore, they conclude that research should utilise multiple analysis methods to minimise bias (Ghermandi et al., 2022). Other studies have identified similar limitations with the capability of commercial image analyses, such as Google Vision or Microsoft Azure (Wilkins et al., 2022).

The latest research on AI confirms that, despite their apparent ease of use, commercial computer vision services should not be used in academic research, at least not as the only analysis method (Ghermandi et al., 2023). Instead, researchers are advised to develop the necessary codes themselves (Marasinghe et al., 2024). However, this approach also presents challenges, as there is no standardized method available for this purpose (Berg & Nelimarkka, 2023). This lack of standardization means that each research group may use a different analysis method, leading to the same consistency problems that they hope to avoid by restricting the use of commercial computer vision programs. This inconsistency makes the prohibition irrelevant and calls for better solutions.

To strengthen the methods, unifying research and coding methods of social media data is needed (Calcagni et al., 2019). The significance of working with multiple data sources and analytical techniques to safeguard against potential misinterpretations that may arise from relying solely on computer vision and social media data is highlighted (Wilkins et al., 2022). If this diversity is not possible or meaningful, other sources, such as interviews, multiple social media sites, or local knowledge, should be used to verify the results (Peng et al., 2023; Spalding et al., 2023). Furthermore, researchers should consider how detailed the analyses of the images must be. The thematic grouping of different tags, such as "kitten" and "cat," which could be categorised under broader labels like "cats," "pets," or "animals" depending on the research objectives, has been identified as a strategy to mitigate bias introduced by algorithms (Berg & Nelimarkka, 2023). These challenges emphasise the importance of carefully selecting computer vision services based on the research goals and being aware of the potential limitations of the technology used in analysing human–nature interactions through photography (Ghermandi et al., 2022).

Furthermore, social media platforms can change rapidly, and entire platforms can be closed for access to researchers or the general population (I. Arts et al., 2021b; Breuer et al., 2020; Freelon, 2018; Toivonen et al., 2019). One of the most significant instances of such a shift happened in 2018 when the scandal related to Cambridge Analytica's Facebook data use (Breuer et al., 2022; Bruns, 2019; Mancosu et al., 2020; Venturini et al., 2019) led Facebook to close off APIs' access to the data on its platforms from researchers.

5.5.4 Qualitative social media analysis

Big Data and quantitative methods help measure what is happening in tourism. In addition, geospatial analyses determine where it happens in comparison with other data, like nature, trails, or cultural history. However, quantitative and spatial analyses do not explain the causalities between various phenomena (J. Zhang, 2021). Furthermore, computer vision-assisted analyses cannot understand the cultural and social meanings associated with the images (Peng et al., 2023). Despite this limitation, qualitative methods are employed in a small minority of visitor monitoring and management research (Pickering et al., 2018; H. Li et al., 2023). Based on the theoretical understanding of the fluctuating nature relationship (Flint et al., 2013) and how people use social media for different purposes (Oliviera et al., 2020), quantitative analyses cannot answer questions about our relationship with nature alone. Therefore, qualitative research and deeper data analysis are developed in this study alongside quantitative and spatial methods to gain more in-depth insights into said causalities (Mills, 2019; Snelson, 2016; Wilson et al., 2015).

Traditionally, the qualitative methods used in tourism research are interviews and observations (Wilson et al., 2015; Xu et al., 2020). Moreover, sentiment analysis techniques can be applied to social media data to gauge visitors' overall positive or negative response towards a particular destination or attraction. As Kitchin (2013) points out, Big Data needs to be studied within its social, cultural, and political context, making room for qualitative enquiries.

Because the amount of information needed is smaller, social media data intended for qualitative inquiry can be collected manually by asking social media users to take screenshots of posts they want to share with the researcher, using netnographic methods, or obtaining large amounts of data using APIs. Often, the data collected using APIs is sorted, and only a fraction of the collected data is used for the analysis.

Fälton (2021), for example, collected Instagram images of each of the 30 Swedish national parks and randomly selected 12 images from each park, a total of 360 images for manual analysis. Fälton studied the images and texts separately, then together with visual observations and empirically grounded interpretations without predetermined questions to find themes and discourses that would arise, finding the online representations of the parks to be relatively homogenous. Based on her observations, she concludes that there are five touristic ways of seeing the landscape in a national park: sublime scenery, uncivilised wildness, challenge, treasury, and unique place with iconic attributes, which construct a romantic tourist gaze as defined by Urry (Urry & Larsen, 2011), sustaining and reproducing the distancing relationship between the visitor and the nature in the national parks (Fälton, 2021).

In another example, Conti and Lexhagen (2020) rely on participatory netnographic observations on Instagram to study the capability of user-generated content to generate multidimensional values. They identify social media as a

practice and place for tourists to create and share their experiences. They strengthen the analysis through unstructured interviews with selected users after collecting and analysing relevant Instagram posts. These interviews confirm, dispute, or elaborate on the researchers' interpretations of the photographs and their attached cultural meanings. Finally, using grounded theory to analyse the collected data, they conclude that online user-generated photography content can contribute to an iterative experience valuation beyond single tourism experiential encounters (Conti & Lexhagen, 2020).

Social media posts have been used in studies in relation to place making in tourism. Place making seeks to transform and improve a location, both in its physical form and its cultural or symbolic significance (Cassel and de Bernardi, 2021). Through qualitative content analysis, Cassel and de Bernardi conclude that vast open landscapes are the most popular image type in Instagram posts with #visitsapmi, and that Sámi people and visitors alongside them are popular topics. Unlike many other studies that focus on location-based sampling, these scholars studied a specific hashtag for tourism that involves the indigenous culture of northern Sweden.

Qualitative methods are often used with quantitative analyses (H. Li et al., 2023) to deepen the quantitative analysis (Bornakke & Due, 2018). Interviews are also used to verify results gained from Big Data, as in the case of the research on landscape preferences by Schirpke et al. (2016), which I mentioned earlier. In another example, Wilkins and colleagues (2022) compare the landscape preferences recognised by computer vision from social media images in Boulder, Colorado to the results of an on-site survey. Comparing images from Flickr with the survey answers, they reveal that Flickr was the least likely platform for visitors to use. They conclude that the two study methods resulted in slightly different preference types, and they sugges that such studies would benefit from using several independent data sources.

5.5.5 Netnography—ethnographic research online

As explained above, previous studies on social media for visitor monitoring suggest that a combination of several research methods offers more reliable results than one single method or data source (see García-Palomares et al., 2015; Heikinheimo, 2017; Muñoz et al., 2019). Moreover, when examining the intricate relationship between humans and nature on social media, relying solely on statistical analysis might oversimplify the complexity of this dynamic (Bornakke et al., 2018; Mills, 2019). Spatial analysis offers more nuanced views; yet, incorporating netnographic observations helps place quantitative findings within their original context, grounding the research in the origins of the data (Addeo et al., 2019; Conti et al., 2020). Using thick data, such as netnographic observations, can reveal insights from the quantitative analysis (Bornakke et al., 2018; Wang, 2013).

Quantitative research can be more easily repeated and replicated through careful documentation of the research phases. The netnographic approach requires the

personal involvement of the researcher, and the observation notes are a subjective experience impacted by the researcher's background.

With Web 2.0, smartphones, and improved internet access, the use of social media has increased in everyday life. With the real–virtual dichotomy no longer valid, research methods from the natural world have moved to the virtual sphere (Baker, 2013). Beginning in the early 2000s and sharply escalating in the 2020s, many academic publications have been developing, analysing, criticising, and using social media for research (Baker, 2013; Hine, 2020; Postill et al., 2012).

Among other forms, ethnographic research methods have been adapted to the web: online ethnography, cyber ethnography, and webnography are some of the names for this method (Garcia et al., 2009). The widely used term netnographic research is described by Robert V. Kozinets (2019). Netnographic research focuses on cultural experiences within social media, considering the virtual space as a place in itself and not simply as a platform for communication between subjects from the real world. Netnographic methods allow the study of social practises within the same everyday contexts where they happen online (Addeo et al., 2019; Garcia et al., 2009; Kozinets et al., 2018).

Netnography was first used in the 1990s by scholars interested in social media research (Kozinets, 2019), which was less widespread than today. However, Kozinets already understood that the norms of ethnographic research could not be implemented directly into social media research (Kozinets, 2019, p6). He was inspired by anthropologists such as Arturo Escobar, Henry Jenkins, Nancy Baym, and Annette Markham (Kozinets, 2019), who study human cultural experiences and highlight the self-reflection of the researchers and participants as part of the research. However, netnography is more than online ethnography or anthropology, which focuses on computer-mediated communication. The scope of netnography includes those traces left behind in the online world, even when the subject has already left.

Netnographic methods are used in content analysis, unobstructive observations, and long-term interactions with online communities (Lugosi & Quinton, 2018). The internet and social media are ever-changing; similarly, netnographic methods and how we define them must evolve (Bowler Jr., 2010; Lugosi et al., 2018; Morais et al., 2020). Developing technologies for users and researchers thus creates the need to advance and redefine the methods (Reid & Duffy, 2018). Netnographic methods have been used to study nature tourism social media by, for example, Conti and Heldt Cassel (2020) and Conti and Lexhagen (2020), who used netnography to understand the expression of the liminality of nature tourism and tourism value creation through social media imagery.

The internet and social media can be the objective of a study and the tool for conducting research (Ardévol, 2012). Baker (2013) explains that social media is a tool, a source of data, and a context for researchers. The researcher needs the skills to use and understand online behaviour to observe the participants through

the computer-mediated setting (Ardévol, 2012). More-than-human actors, such as camera use and platform functionalities (Lugosi & Quinton, 2018), shape the online experience, interactions, and even the data left behind. Thus, their role must also be considered and understood (Ardévol, 2012; Lugosi & Quinton, 2018). Algorithms are an integral part of the experience, just as any other feature (Baker, 2013).

Netnography includes established methods for data collection, analysis, and interpretation (Kozinets, 2019). Researchers have used these tools in different disciplines, such as computer science, cultural studies, media studies, and consumer research. The common theme is understanding the culture of online communities (Bowler Jr., 2010; Gretzel, 2017). According to Gretzel (2017), netnography uses the same technological affordances that enable the very existence of the data it collects.

5.6 Pitfalls and limitations of social media in visitor monitoring

Every study is bound by inherent limitations. Selected data collection and analysis methods can create biases, which researchers can mitigate through procedural remedies and encompassing techniques, like employing various data collection methods to measure distinct constructs (Podsakoff et al., 2012). Qualitative research, while rich in depth, can be subjective and often lacks generalisability due to smaller sample sizes. It is also time consuming and may struggle to measure abstract concepts precisely. Quantitative research, on the other hand, provides numerical data but may oversimplify complex human behaviours and lack depth. It can also be inflexible and may not always translate statistical significance into real-world significance. Validity threats, whether internal or external, are also concerns (Taherdoost, 2022). The outcomes of research can be influenced by technical limitations, such as the availability and sophistication of tools for data collection and analysis, as well as data collection biases introduced by the methods employed, such as surveys or interviews, which may impact the responses obtained.

Conducting research online, whether focusing on online content or utilising online surveys, likewise offers distinct advantages and challenges. Such online research is often more cost-effective and efficient in gathering extensive data within shorter timeframes (Regmi et al., 2017). However, there remains a risk of selection bias, particularly when the online approach predominantly targets specific populations, such as internet users, potentially excluding those lacking access to or familiarity with digital technology (Bethlehem, 2010). In this section, I will discuss the limitations related to using social media data for research, focusing on its applications for visitor monitoring and management.

5.6.1 Representativeness and quality of the data

Scholars agree that social media data has many uses and advantages for visitor monitoring. However, concerns about using social media data in research are as prolific as the possibilities such user-generated data offers (Berg et al., 2023; Ghermandi et al., 2019; Sonter et al., 2016; Wilkins et al., 2022). These concerns begin with the representativeness of the data, privacy issues, and datamining restrictions (X. Lu et al., 2015; Mkono et al., 2017; Oteros-Rozas et al., 2018; Tenkanen, 2017). Flickr is one of the most popular platforms for accessing social media data (Y. Chen et al., 2023), yet it is not very popular among users (Petrosyan, 2024), as seen in the study in Boulder, Colorado presented above (Wilkins et al., 2022). For example, Kajikawa Aa et al. (2023) note a strong nationality bias in studying social media platforms in the Nikko National Park in Japan. Local visitors mostly used Twitter, and foreign tourists preferred Facebook and Instagram. They conclude that the choice of platform can impact the study results, and thus it is important to consider which platform to use in a study. These researchers verified their social media data with an on-site survey.

Comparative studies have demonstrated that there can be significant differences between social media use in urban and rural areas (Cui et al., 2021; Jean-Louis et al., 2024). In addition, data might contain many posts from active and more dominant people, leading to biases (Ghermandi & Sinclair, 2019). In addition, we know from research on social media use that there is some bias towards more educated and wealthier people, as they use the platforms more (Arts et al., 2021). Since collecting demographic data from social media is technologically challenging and fraught with privacy concerns, demographic biases remain a significant limitation for generalising results based on social media data.

The quality of the data can be questioned, too. There can be provocative, staged, or commercial posts among regular traveller posts, which are difficult to remove from a large data pool (Heikinheimo, 2017; Teles et al., 2020; Tenkanen, 2017). Posts made by automated accounts (bots) and advertisements can alter the results as well (Daume et al., 2014; Tenkanen et al., 2017). These factors should be considered when evaluating how well social media suits, for example, defining landscape preferences (Ghermandi et al., 2023; Muñoz et al., 2020).

Furthermore, discrepancies in internet access across nature destinations can cause spatial bias on social media; typically, more posts are shared from locations near roads and other built infrastructure (ElQadi et al., 2017). Similarly, some activities, like mountain biking, might be under-represented due to their nature, which does not allow photography as easily as others (Ghermandi & Sinclair, 2019; Norman et al., 2019).

Acknowledging the more-than-human actors is imperative for analysing any social media or web data, since all online service providers use algorithms and technological advancements (Bucher, 2017). Algorithms are another factor impacting the online

experience, just like the type of mobile phone or camera the person uses or how good the mobile data connection is. In computer science, algorithms are computational and mathematical procedures based on social media users' previous choices (Dourish, 2016). They are part of the online experience, an invisible and often unconsidered actor at the centre of online communication (Lugosi & Quinton, 2018). For example, Facebook constantly collects user information, and these complex and undisclosed algorithms tailor content for each user (Kozyreva et al., 2021). In addition, the algorithm learns which posts receive the most reactions and favours those posts over others, creating more visibility for them (Hitlin & Rainie, 2019). The complexity of these algorithms means that it is not meaningful to talk about one algorithm, as several of them are constantly impacting any given set of data (Hetemäki et al., 2021).

Social media users often post the content that they expect to gain the most reactions (Dunkel, 2015; ElQadi et al., 2017; Ghermandi et al., 2019; Wood, 2013). In addition, the platform algorithms (Bucher, 2017; Daume et al., 2014) also impact the available research data. When a minority interest is shared, it quickly disappears from the algorithm and will not have a similar position in the data network as more popular posts (Daume et al., 2014). In addition, social media tends to favour happy narratives (I. Arts et al., 2021b), which is yet another reason why the results of any research using social media as data source need to be viewed critically.

5.6.2 Data collection

Once the social media biases have been established and addressed in the best possible manner, there is one more uncontrollable hurdle to meet. In early social media research, Instagram and Panoramio were popular research platforms (Barros et al., 2022; Figueroa-Alfaro et al., 2017; Memon et al., 2015; Tieskens et al., 2018). However, the popular platforms owned by Meta, Facebook and Instagram, do not allow APIs for data collection, and Panoramio has ceased to exist. As explained earlier, while Flickr and X (Twitter) are not the most popular social media platforms, they offer access through API for researchers. Therefore, despite several studies showing a strong bias among their users, they have been among the most popular research platforms (Toivonen et al., 2022).

Many researchers propose that data collection be done together with social media users to avoid Meta's API ban (Breuer et al., 2020; Halavais, 2019). When a researcher decides to use API or manual data collection from Meta-owned social media, they must take into consideration the platform rules (which ban all such activity) and be prepared to be banned from Facebook and even to face court (Brandom, 2021; Vincent, 2021).

Despite these hurdles, some researchers continue to use Facebook and Instagram data for research (see I. Arts et al., 2021b; Breiby et al., 2023; Bruns, 2019; Conti et al., 2020; Fälton, 2021; Freelon, 2018; Siegel et al., 2022; Smith, 2021). The first

court cases in the US concerning data scraping from Facebook were ruled in favour of the researchers (Laurel, 2021). The US court system has repeatedly ruled that banning access to public information, such as public Facebook posts, for academic research serving the public interest might "constitute[s] a violation of the First Amendment and United Nation's human right to free research" (Mancosu et al., 2020; Sandvig, 2017).

The selection of platforms significantly influences the study's outcomes, as each platform tends to attract distinct user demographics and is conducive to varying types of content. Different social media platforms serve as unique ecosystems with their own norms, preferences, and user behaviours. In 2019, Facebook and Instagram were the most popular platforms measured by the amount of content from Kilpisjärvi and the Käsivarsi Wilderness Areas. In addition, they were the most popular platforms as reported in the Metsähallius visitor survey of 2019.

Relying on algorithms managed by large corporations in complex ways that aim to support their business interests, not objective research (Bucher, 2017; Dourish, 2016; Hitlin et al., 2019), can be problematic. Thus, research often tries to minimise the role of algorithms by, for example, using APIs to collect large amounts of data. In qualitative netnographic studies, the researcher can actively participate in and interact with the online communities they are studying to gain more control over the content (Wade, 2020). Algorithm-based data sampling is often seen as biased and unreliable; the critics claim the "reality" presented is determined by uncontrollable and unknown forces. However, algorithm-based sampling also enables the observation of the phenomena in the same manner it happened initially (Kozinets, 2019; Reid et al., 2018), which is an essential characteristic of netnographic studies. Therefore, it is important to note that in this research, the data gathered from Facebook for quantitative analysis should not be regarded as fully representative of all visitors to Kilpisjärvi. Instead, it offers insight into how the Facebook algorithm can influence a user's perception of the tourist experience, expectations, and gaze in Kilpisjärvi.

5.6.3 Privacy and ethical considerations

One of the most significant concerns about social media is the question of privacy and the consequent ethical problems of research (Ghermandi et al., 2022; Ilieva et al., 2018; Song et al., 2020; Zabelskyte et al., 2022). Due to these privacy issues, social media data analysis rarely contains demographic data (Daume et al., 2014).

Privacy issues are the most mentioned concerns regarding any research based on social media data. I find it concerning that Y. Chen et al. (2023) note that only 23% of the studied articles in their literature review mention research ethics. The European Union's General Data Protection Regulation (GDPR) sets out rules for how the personal data of individuals located within the EU can be legally processed and transferred (Council of the European Union, 2024). The European GDPR and

research ethics (see for example Kohonen, 2019) must be considered when collecting data from social media (Wade, 2020). The border between public and private is obscured in online communities and social networking sites (such as Facebook) by ambivalent security and ownership regulation (Bateman et al., 2011; Kapoor et al., 2018; Wade, 2020). Moreover, according to Kapoor et al. (2018), the users of social media are not always aware or accepting of the fact that Facebook (Meta) claims ownership of all the content on its platforms (Bucher, 2017; Kozyreva et al., 2021).

Thus, the three most likely regulatory and ethical issues the researcher must bear in mind are breaching the terms of use (the ban on data collection) of the platforms, to which all users agree when signing in; the European GDPR laws on privacy; and the ethical and legal concerns regarding collecting private data (Mancosu & Vegetti, 2020). The privacy of the subjects and respect for European GDPR laws must be the priority of all research on social media, from data storage to possible quotes and publications.

5.6.4 Data analysis with computer vision

Commercial programs, such as Microsoft Azure, Google Cloud Vision, or Amazon Rekognition, are now available, and they offer pre-trained models and customisable tools for image analysis (Ghermandi et al., 2022). These platforms provide researchers with access to image recognition and analysis capabilities without the need for extensive programming or machine learning expertise. Recent research has discovered that these commercial programs can yield varied results. This disparity arises because each programme's specific algorithms and methodologies varies (Berg & Nelimarkka, 2023). Similar issues arise when each research group uses their own coding, which can significantly influence the analysis outcomes. To overcome this challenge, it is currently agreed upon that research should use the results of multiple analyses (Berg et al., 2023; Ghermandi et al., 2022).

Researchers have reported that commercial AI-supported image content analysis programmes can encounter difficulties in recognising elements characteristic of the study area (Berg et al., 2023; Ghermandi et al., 2022; Peng et al., 2023). Berg and Nelimarkka (2023) compare several commercial image analysis programmes and conclude that there could be significant differences between the results, and thus their use in scholarly work should be avoided. Researchers have further stated that more reliable results are gained when the computer vision programme used is trained by the researchers (Marasinghe et al., 2024).

Research on the usability of computer-vision image analysis thus agrees that accurate analysis requires employing multiple analysis programmes for result comparison. If using multiple analysis programmes or training one's own is not feasible, the literature recommends using multiple data sources. For example, local expertise can be used to interpret the outcomes of machine-vision data tagging (Spalding et al., 2023).

Supplementing findings with additional data sources, such as traditional visitor surveys, can help with data weaknesses (Spalding et al., 2023). In this study, I use the 2019 Metsähallitus Parks and Wildlife Finland Visitor Survey and counter data to compare and verify the social media data identifying the most visited locations around Kilpisjärvi. In addition, I compare visitor information, such as most common activities and visitation motivations, with social media data. Netnographic observations can also help to verify whether the quantitative analysis results correspond to the online realities or if there are data collection or analysis biases present. Only phenomena verified using these other data sources are considered in this study. My familiarity with the Kilpisjärvi region likewise allows for a critical review of the full list of tags generated by the programme.

Data reliability can also be enhanced by merging tags into groups and working with fewer categories. Among other scholars, Berg and Nelimarkka (2023) discuss the possibility of identifying similar tags, or labels as they call them, using language models such as GPT or Bard. Therefore, planning how many categories are needed to answer the research questions is important.

Despite incorporating these methods to mitigate uncertainty in the image tags, a degree of ambiguity persists in the results (Wilkins et al., 2022). Nevertheless, given the study's main research question—what are the implications of social media for visitor management in protected nature recreational areas?—the attained level of certainty suffices. Given that AI-empowered tools are developing quickly (Ghermandi et al., 2022), they are already accessible to anyone, and park managers are interested in using them (Mangold et al., 2024). Therefore, understanding how data with limitations will reflect reality is essential.

Many visitor management practitioners are reluctant to use social media data due to the remaining open questions (I. Arts et al., 2021a). Understanding possible information bias, the lack of socio-demographic data, and the consequent uncertain representativeness (Ilieva et al., 2018; Song et al., 2020; Toivonen et al., 2019) are the most critical prerequisites of the use of social media data in this field. Biases do not preclude the use of the data, but their impact on the results should be carefully addressed (Heikinheimo et al., 2020).

The cooperation between academia and industry is seen as one way to make the research more accessible for visitor management in, for example, national parks (Puschmann, 2019). Some park managers also use these digital tools to supplement conventional monitoring methods (Mangold et al., 2024). Despite facing challenges, such as insufficient staff and skill shortages, most park managers surveyed by Mangold et al. (2024) regarded social media as a valuable supplementary source for visitor monitoring.

6 Methodological approaches of this study

6.1 Theoretical foundations, methodological choices, and ethical considerations

According to the social constructionism approach, nature relationships are created and negotiated in interaction with an individual's social surroundings (Demeritt, 2002; Geider et al., 1994; Proctor, 1998), such as social media sites related to nature tourism (Hunter, 2016). When a visitor looks at the destination through the touristic gaze, it has implications for their expectations and their behaviour at the destination (Urry et al., 2011). In this study, I aim to determine the applications of social media for visitor management in protected nature recreational areas through the example of Kilpisjärvi and the Käsivarsi Wilderness Area. I approach the research question through three sub questions and a blend of quantitative, spatial, and qualitative research methods.

To study what is posted on social media about the visit to Kilpisjärvi and the Käsivarsi Wilderness area, I collect posts from June – September 2019 from Facebook and Instagram. This period was chosen because a traditional Metsähallitus Parks and Wildlife Finland visitor survey was conducted at the same time, providing a source of standardised background information for this study. Posts are collected manually from Facebook and using and automated programme for Instagram. Furthermore, a netnographic study is conducted from June 2019 to December 2021. I employ quantitative methods and form categories based on the posts' contents. Next, to understand how this content maintains concepts of nature from the past and creates new ones, I use geospatial analyses, combining the social media content with the natural and geographical features of the region. Spatial analysis can be used to understand how the landscape is socially constructed (Rucks-Ahidiana et al., 2017) Furthermore, it allows the study of whether the social media content comprehensively covers all potential landscapes or is predominantly focused on specific ones. I will discuss how these findings reflect past constructions of nature as they relate to Kilpisjärvi and the broader conceptualisations of wilderness in nature tourism. I also reflect on these quantitative and spatial analyses with netnographic observations to better understand them in the context of social media communities. Finally, as the research field and especially the research methods are still young and in development, based on my findings I will discuss what social media and Big Data methods can offer visitor monitoring.

An integral part of mixed-methods research is the integration of methods, as opposed to just using two different and independent methods in one study (Fàbregues et al., 2021; Mertens, 2011). In this project, I blend quantitative, spatial, and

netnographic research methods and analysis tools to examine social media content. More than just using various methods, I employ them in a way that is overlapping and intertwined, contextualising the quantitative data within its original framework as suggested by, for example, Bornakke and Due (2018) or Shaffer (2018). The research process with multiple novel data collection and analysis methods is challenging yet fascinating. Figure 12 shows how this process progressed in various steps.

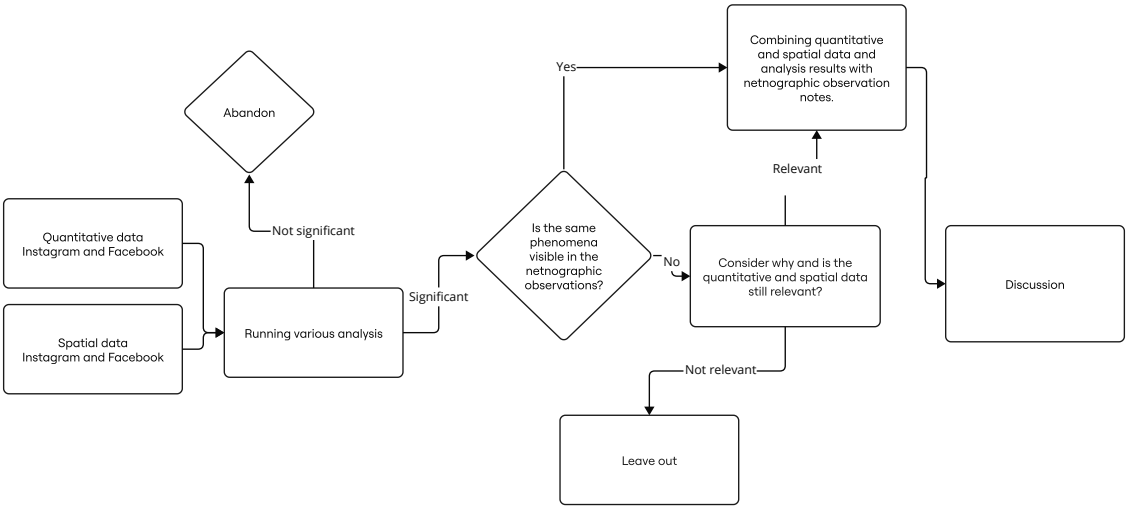


Figure 12 The process of using netnography to validate quantitative and geospatial analyses.

At first, I had a set of quantitative data with countless possibilities concerning how to start organising it. I ran tests similar to those run by other studies, such as landscape preference heatmaps of locations, photo themes or caption moods, and crossed checked them with netnographic observations. Through testing and data processing, I was able confirm whether the quantitatively observed phenomena were relevant in a larger context.

After several rounds of testing, alongside returning to the netnographic observations and the theoretical context of the study, some patterns started to emerge. Similarly, I then interpret the meaning and importance of the maps produced through spatial analysis using the netnographic research notes.

The strategy of blending multiple research methods provides a large corpus of information and allows for a nuanced exploration of the research objectives. The mixed methods facilitate a holistic understanding of the complex phenomenon of social media and its impact on both visitors' relationships with nature and visitor monitoring and management.

The data collection and image analysis constraints in this study heavily influenced the selection of analysis methods. The social media data was initially collected as

part of a visitor monitoring pilot project primarily aimed at exploring the potential insights that visitor monitoring personnel could extract from such data. Due to limitations in coding and data mining capabilities, as well as a restricted budget for outsourced analysis, the scope and depth of the project were constrained. Despite these confines, the pilot project revealed that social media data is a valuable supplement to traditional visitor monitoring tools, offering unique insights not accessible through other sources (Hutton et al., n.d.).

As a member of the Finnish academic community, in my research I am committed to following the guidelines outlined in the Finnish Code of Conduct for Research Integrity by The Finnish National Board on Research Integrity (TENK). This code of conduct ensures that research conducted in Finland maintains ethical standards and credibility. Adhering to the principles of reliability, honesty, respect, and accountability as they are outlined also in the European Code of Conduct for Research Integrity followed by TENK ensures that good research practices are maintained across all stages of the research process, thereby contributing to the integrity and quality assurance of scientific activities (TENK, 2024).

According to the guide for the ethical principles of research with human participants published by TENK (Kohonen, 2019), any research involving humans must respect the dignity and autonomy of the participants. Furthermore, the research must be conducted in a way that does not cause significant harm to the participants or communities that form the research subject. When research concerns people, their participation must always be voluntary, and they should always have the opportunity to withdraw from the research at any given time. With Big Data social media research, there is an ethical debate regarding the participants' consent to be part of the research.

The data used in this research was shared publicly. This privacy setting allows anyone to see the data, but it does not necessarily mean that it can be freely used for research (Olteanu et al., 2019). Asking for permission to use the shared data from hundreds of social media users is impractical (Bakshy et al., 2016), which leaves an even greater responsibility for the researcher to treat the data in an ethical manner.

In addition to collecting social media data, during the first three years of this research project, until September 2021, I lived in Kilpisjärvi village. I often observed and lived in the same spaces both online and offline. Thus, in addition to the online observations, I also note how online content leaks into the offline world. The netnographic observations and their counterparts in the physical world help me contextualise what the quantitative data revealed. Just as with the online data, I have not included any personal information or any direct connection between what I saw online and in the field in my notes. It is impossible for me or anyone else to trace a person from my notes or the datasets. Likewise, tracing any specific posts from my notes is also impossible, as they focus on my thoughts, observations, and experiences rather than documenting individual posts.

6.2 Collecting data from social media

I reviewed the number of posts shared on various social media platforms with a geolocation or hashtag related to the research area. There were very few posts on any other platforms, so I chose to collect the data from Facebook and Instagram, which appeared to be the most relevant social media platforms for the visitors to the area. In this project, I did not use hashtags or search social media groups related to nature observations. Several such groups exist, such as those dedicated to wildflowers and bird observations, and they sometimes see posts from Kilpisjärvi too. However, I did not include them in this study because I wanted to focus on general travel-related social media content.

6.2.1 Collecting data from Instagram

This phase was done through a visitor-monitoring pilot project with the Finnish Metsähallitus and Norwegian Reisa National Park management. The data was collected from posts made between the 1st of June and the 30th of September 2019 from Kilpisjärvi village, the Malla Strict Nature Reserve, the Saana fell, and the Käsivarsi Wilderness Area. I used both geotags and hashtags of the most important location names in Kilpisjärvi and the Käsivarsi Wilderness Area, as presented in Table 2 below. When applicable, I used both the Finnish and English names of the location. Initially, I collected Sámi language place names, too, but there were only two posts, so I left these out of the dataset.

I downloaded the data from Instagram using a commercial APA 4K Stogram, typically used in brand awareness and brand research in the marketing industry. The application allows the user to collect publicly shared posts using geotags or hashtags. The application does not download personal information, such as name, gender, or location of the profiles; it also collects text captions in a separate file from the images.

Table 2 Locations and geotags used to collect data from Instagram.

Location name	Collected Instagram geotags and hashtags
Kilpisjärvi village (Finland)	Kilpisjärvi, Salmivaara, Lake Kilpisjärvi, Tshalkaljärvi
Malla Strict Nature Reserve (Finland)	Malla Strict Nature Reserve, Mallan luonnonpuisto, Rajapyykki Three countries border, Malla, Kolttalahti, Kuohkimajärvi
Käsivarsi Wilderness Area (Finland)	Käsivarsi Wilderness Area, Käsivarren erämaa, Käsivarren erämaa-alue, Halti, Kalottireitti
Saana fell (Finland)	Saana, Saanatunturi, Saanajärvi

Due to a budget restriction placed on the project in which this data was originally used, a sample was taken by selecting every third or fourth image from each area; the rest of the images and their captions were deleted. In this study, I have used 3669 Instagram images from the above-mentioned locations. The API software does not read Scandinavian letters or emoticons. The text cleaning was done by transferring all the texts to one Microsoft Word document, in which I manually corrected the words. Finally, the selection of images and their analysis for the spatial analysis was done manually. This process is also described in Figure 13 below:

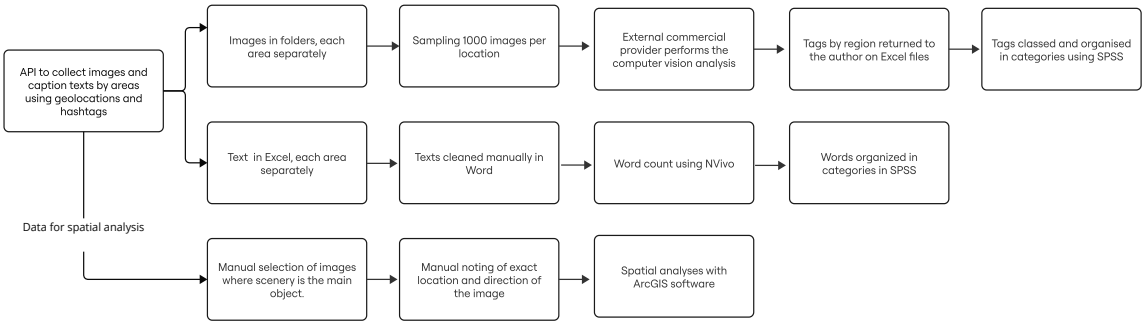


Figure 13 Sequential steps in processing Instagram data.

6.2.2 Collecting the data from Facebook

The Facebook data was manually collected daily from the 1st of June to the 30th of September 2019. I considered several options for data collection from Facebook. Due to the Facebook Inc. (Meta since 2021) API ban, I had to use manual collection methods. I joined the Facebook groups *Lappi sanoin ja kuvin*, *Käsivarren vaeltajat*, *Matkalla Lapissa ja Saamenmaalla, Lappi sanoin, kuvin ja kokemuksin—Se rennompi vaihtoehto, Kilpisjärvi*, *Vaellus, Lapin vaellukset*, and *Retkeily ja vaellus.* These groups focus on topics related to Kilpisjärvi, the Käsivarsi Wilderness Area, and discussions related to hiking and the outdoors. The groups were either public, where everyone could see and react to the posts, or private, where only members could see and react. In the summer of 2019, their sizes varied from 3000 to over 50,000 members.

Collecting data from Facebook manually requires sifting through individual posts. Given the risk of inadvertently encountering posts from acquaintances or recognising particularly active users, I avoided direct exposure to the content. Instead, to mitigate personal bias and maintain objectivity, I collected posts that appeared on my feed daily as curated by Facebook's algorithm.

By relying on this automated selection process, I could ensure a random content sample without the need for subjective decision-making. The algorithm impacting

my Facebook feed is not free from biases, as it is based on my online behaviour on and outside of Facebook. The types of posts I was reading elsewhere on Facebook made the algorithm conclude that I wanted to see more similar posts. What I posted on my personal Facebook wall, the posts I interacted with, the webpages I visited, and so forth all impacted the algorithm in ways I will never know (Bucher, 2017; Hitlin et al., 2019; Kozyreva et al., 2021). This complex set of consequences of various human practices (Seaver, 2017) has impacted the creation and, similarly, the collection of the data I research.

I saved the posts using the "Save" feature on Facebook in a folder I named "PhD" on my Facebook account. None of the posts were downloaded, but I can access them unless the people who shared them have deleted them. Once the research is completed, I will remove the saved posts from the Facebook folder.

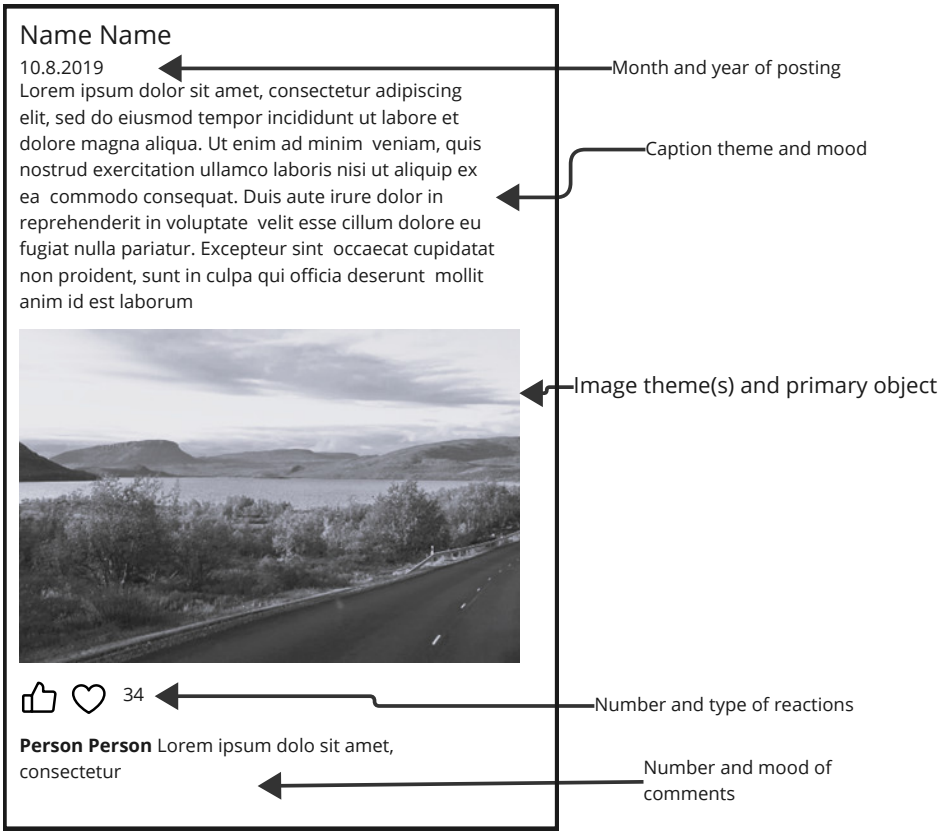


Figure 14 Data obtained from Facebook images and text.

At the end of the collection period, the Facebook data was manually labelled, as shown in Figure 14 above. All the data was coded in an Excel sheet. I annotated the post date, assumed gender of the author, language of the post, image topic and object, caption text, tone of the caption, and number of reactions. Gender information was later excluded from the data due to reliability issues, as it is impossible to determine whether the profile names used were the individuals' real names. Facebook posts do not always include a geolocation; therefore, I identified the location either from the text caption (when a location was mentioned) or based on a recognisable location in the image.

The Facebook images were labelled with a focus on identifying the primary object in each photo and assigning just one tag per image. Consequently, the number of tags is lower compared to the computer vision-tagged Instagram images. However, this data offers insights into the main subject of each image, unlike the Instagram tags.

In cleaning up the data, I removed any company promotions and posts shared from other sites, such as newspaper articles or blog links. Posts about the hiking trails through Sweden, Norway, and Finland are included in the data because the trail starts and finishes in Kilpisjärvi, and the posts were published in Kilpisjärvi-related groups. The process is visualised in Figure 15 below.

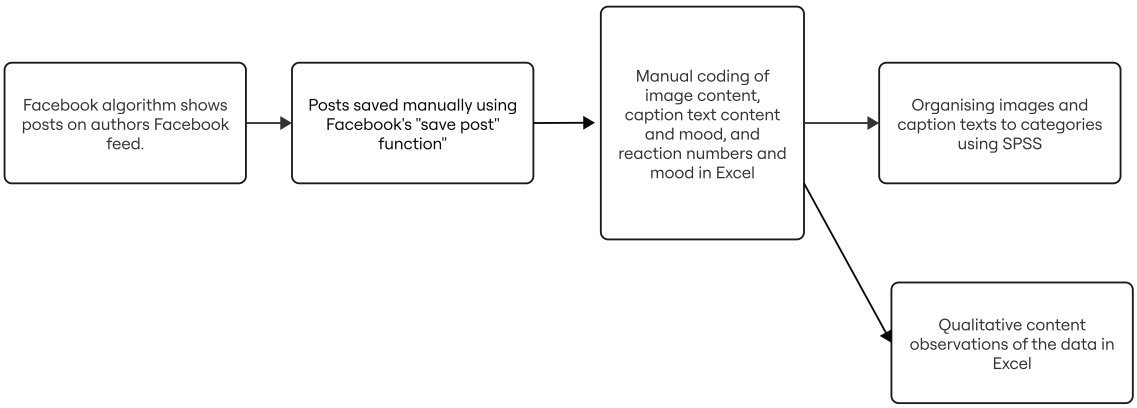


Figure 15 Sequential steps involved in analysing Facebook posts.

6.2.3. Non-participatory netnographic observations

As in any netnographic research, in this study I observed the tourist gaze on social media within its natural environment, online, exploring the phenomena without setting any preset questions or hypotheses. To balance the requirements of objectivity, replicability, and subjective immersion in the selected social media, I will discuss my role on these platforms in detail. Social media platforms would have allowed

even a global study on the topic, but such large datasets would not have facilitated a simultaneous qualitative study. Therefore, I studied the global phenomenon through a case set in Kilpisjärvi in Finnish Lapland.

The netnographic observations began on the 1st of June 2019 and continued until December of 2021. The most active period for these observations was during the summer of 2019, at the same time as the quantitative data was collected. However, I continued observing and making research notes long past the most active period, even towards the end of the data analysis and report writing, as presented in Figure 16.

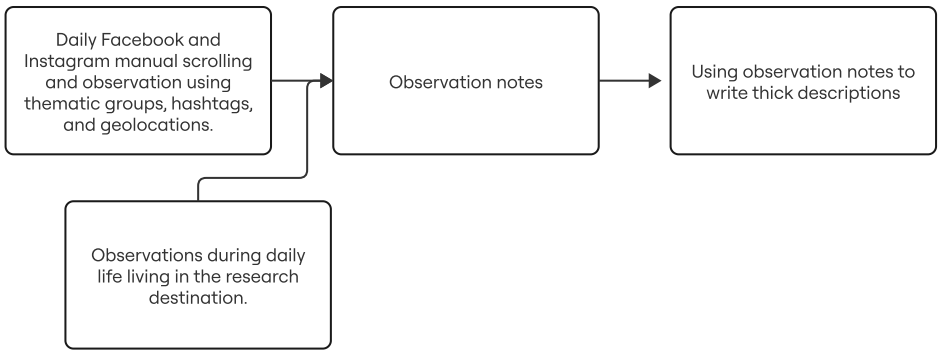


Figure 16 Sequential steps in qualitative data collection and analysis.

Every day during the summer of 2019, after saving relevant posts for the quantitative data, I would spend about an hour reading posts on the Facebook groups I had joined. The most active groups I followed were *Lappi sanoin ja kuvin*, *Käsivarren vaeltajat*, *Matkalla Lapissa ja Saamenmaalla*, *Lappi sanoin, kuvin ja kokemuksin—Se rennompi vaihtoehto*, *Kilpisjärvi*, and *Vaellus*. Some focused on trekking and hiking in general, while others were platforms to share pictures and stories from visits to the Kilpisjärvi region. In addition, on Instagram, I followed the hashtags and geotags I fed into the API when collecting Instagram data and occasionally reviewed the posts Instagram suggested for me. None of these posts were downloaded or saved. I made notes in varying amounts; some days, it was only a line or two, while on others I reflected at length.

In the beginning, I was only observing the activities on social media. However, in October 2019, I started interacting in some of the Facebook groups. At first, it simply involved answering practical questions about the local conditions, but gradually, I became more active and even posted about my outdoor experiences unrelated to this study. I have mentioned several times on the platforms where I have been active that I was also conducting research.

I started working as a digital marketing developer for a local destination management organisation (DMO) in Norway in the summer of 2020. One of my

tasks was to be active in various Finnish social media groups and share information about the region, especially outdoor recreation possibilities. When posting in social media groups, I mentioned that I was posting as a representative of the DMO to avoid any conflicts of interest or abuse of my position as a trusted online person. I quickly became well-known in some of the same groups I was studying. As part of my work at the DMO, I observed the conversations in these groups to identify and predict hotspots, interests, and issues so that I could react to them quickly and produce interesting online content for the DMO's social media sites.

In August 2020, I took part in filming *Peltsin toinen luonto*, an outdoor adventure documentary in the Käsivarsi Wilderness Area with a famous Finnish TV host. The episode came out at the beginning of December 2020, and my social media reputation as "the local person to ask about anything related to the outdoors" was determined. Suddenly, I was known by many and tagged in conversations as the person "who must know the answer." Facebook gave me the "appreciated publisher" and "conversation starter" badge designations in the same groups where I collected the data for this research. My active membership likely enriched my observations with deeper insights and contextual understanding and introduced challenges related to bias, influence, and ethical considerations. Therefore, I ended the systematic observations when I became well-known in the groups at the end of 2020 and annotated only occasional notes in 2021. In addition, by employing strict ethical practices, such as never using conversations I was involved with in this research, I can mitigate some of these negative impacts and ensure the integrity of my research.

6.3 Analyses used

The three datasets—quantitative, spatial, and netnographic—were first studied individually to familiarise myself with the data. I transferred the quantitative data from Excel to IBM SPSS Statistics (SPSS from here on) software and ran various descriptive analyses to understand what the large dataset contained. I compared the research notes and quantitative analyses and included the events and phenomena I found in both in further study. In addition, I ran the 2019 visitor survey data from Metsähallitus's visitor information system "ASTA" spreadsheets in SPSS to determine whether there were any statistically significant correlations between social media use and activities, visited locations, or preferences.

As visualized in Figure 17, the datasets and the theoretical discussion helped to form five categories into which I grouped the original tags for further discussion.

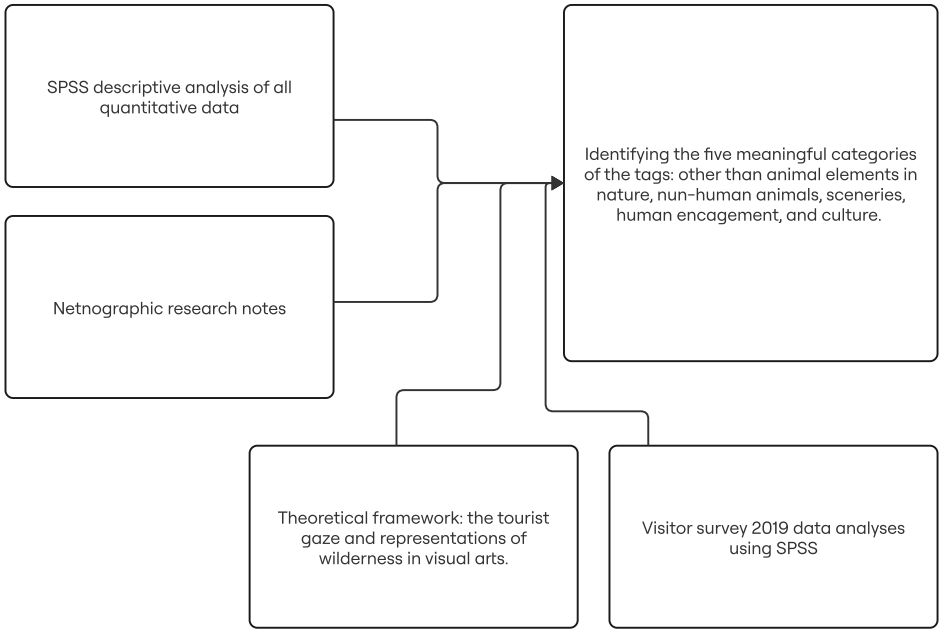


Figure 17 Forming five meaningful categories from the datasets.

6.3.1 Quantitative analyses of social media content

The commercial computer vision programs discussed previously in Section 5.5.3 were not available in 2019 when the Instagram images were analysed in the pilot project. That project opted to purchase image analyses from a commercial operator. Therefore, in light of current knowledge, the method employed in this study to analyse images should not be regarded as an exhaustive certainty. As there was no possibility of using various image analysis programmes or even of knowing how the computer vision programme was trained, I have used other methods to verify the reliability of the analysis results, which I will explain below.

Instagram

After downloading the data from Instagram, an external commercial operator, Valossa Labs Ltd. from Oulu, Finland, performed computer vision analyses of the images. Instead of seeking out specific features within the images, we opted for an exploratory approach to uncover what information the social media posts could provide us. Therefore, Valossa was not given any specific instructions regarding what we wanted to find out about the images.

The computer vision programme processed the images and assigned each image tags based on the objects it could recognise. These tags were listed in an Excel file by area. I transferred the data to the SPSS dataset to be further grouped and analysed. The resulting conclusions had uncertainties related to the tag generation done by

the commercial operator. In addition to not knowing how the computer vision was trained, the tags it generated do not specify the main object of the image. For instance, an image tagged with "sky, mountain, human, plant, branch" could depict a variety of scenes, such as a selfie with a mountain backdrop and a tree branch in the corner or a distant person hiking amidst mountain scenery with foreground foliage. Consequently, this process merely identifies common items present in the images rather than pinpointing the primary focus. Moreover, the program may produce multiple tags for the same element, adding complexity.

Since we did not conduct the coding or training of the computer vision ourselves but rather procured the service from an external provider, it was anticipated that issues would arise. Consequently, it is necessary to interpret the dataset with knowledge of the local conditions. We can observe that the assigned tags "coast," "shore," and "sea" are frequent, even though the studied area is inland. This discrepancy can be explained by the presence of large lakes that predominate the landscapes. Likewise, we can see tags like "deer," which are not very common at the region; reindeer, in contrast, herd in the region all year around. Therefore, local knowledge is essential for accurate interpretation of the results.

Each image was marked with up to 17 tags. The example below illustrates how I received the tags from the analysis, each line corresponding to one image. As can be seen in Table 3, certain elements received multiple tags with very similar meanings, such as "loch" and "lake" or "motorcycling" and "motorcycle."

Table 3 Example of the original tags for the Instagram images.

mountain,ridge,wilderness
mountain,nature,sky,hill,plant
monochrome,monochrome photography,waterfall,black,rock,nature
leaf,grass,flower,yellow,wildflower,moisture,flowering plant,branch,plant stem,macro
photography,blossom,crop,plant,nature
cloud,sky,mountain,wave,reflection,nature,loch,lake
motorcycling,motorcycle
sea,reflection,monochrome,loch,monochrome photography,coast
flower,plant,line art,leaf
rock

The Instagram caption texts and hashtags were stored in an Excel file when downloaded from the 4KStogram API. The software does not read Scandinavian letters or emoticons, so there was a laborious text cleaning process involved. I transferred all the texts to one Microsoft Word document, in which I manually corrected the words and removed the emoticons, hashtags, prepositions, articles, and conjunctions. The cleaned text resulted in over 100 Microsoft Word pages,

which I uploaded to NVivo, a software used to organise and analyse large volumes of unstructured text data. I ran a word frequency query in NVivo for the 1000 most frequent words of more than 4 letters. I set the query to seek stemmed words, so words like "Finland" and "*Finlandia*" would be calculated together.

Considering the small geographical size of the research area and based on this quick query, I deemed it unnecessary to conduct caption analysis separately for each area. I could conclude that the most common words were very general, topic-specific hashtags. Such tags are used by individuals to categorize their posts according to specific themes or topics, making it easier for others who are interested in those themes to discover and engage with their content. I recognised them due to my previous experience in social media marketing. Although grammatically incorrect, they typically consist of two or more words written together. I verified this category with the original texts and noted that these words are predominantly marked with the "#" symbol, occasionally accompanied by the "@" symbol, indicating that the individual has tagged or referenced the account in question in their post.

Facebook

I employed an inductive qualitative content analysis approach to categorise Facebook captions. My decision was influenced by the limited data collected, as the sampling method was not sufficient for a meaningful quantitative analysis. Given the small number of collected captions (335), it presented a reasonable amount of work.

Next, I coded the image and caption content into themes using inductive qualitative content analysis. Taking an inductive approach means that rather than starting with predetermined categories, researchers use their theoretical understanding and research objectives to identify patterns or themes within the text data without imposing preconceived notions (Spannagel et al., 2005). During this process, I also added information about whether and how the post mentioned locals, nature, or culture. Next, the Excel spreadsheet was converted to an SPSS dataset for further analysis.

The comments on the Facebook posts were grouped based on the tone of the comment: advising others, having a neutral conversation, encouraging others, loving what was shared, affirming and sharing the same feelings that were shared, negative comments, and expressions of awe. Examples of each category are given in Table 4 below.

Table 4 Facebook comment categories.

Category	Example of comment
Advice	You should never go [to the Wilderness Area] without a tent!
Conversation	Was there already snow in Halti? Do you know if the trail is well marked?
Encouragement	You can do it! Just go!
Love	Oh, so beautiful! I love it! [heart emojis]
Affirmation	I was there last week! I have always wanted to go there too. Replies with photos of the same location.
Negative	Why do cyclists have to go everywhere? [to an image of cyclists]
Wow!	Wow! That is amazing! Impressive!

It is crucial to acknowledge that the data presented in this study is not exhaustive enough for generalisation, as it was sampled using the Facebook algorithm. This dataset serves as a snapshot of what any user could have encountered during the summer of 2019.

Categorisation

To move beyond individual platforms and develop a more comprehensive understanding—the big picture—of the social media image of wilderness, guided by the theoretical background of the tourist gaze and visual representations of nature in the past I formed five groups (nature, animals, scenery, engagement, and culture) into which I grouped the previously presented quantitative image and text data.

My primary question at this point was how nature was presented in the social media posts, so I began with finding all the tags describing natural elements and beings, leaving humans out of this category. Furthermore, these nature-related tags were divided into three groups: spatially static, i.e. plants, trees, rocks, and sand, and weather and similar phenomena, like snow or northern lights; into another group I distributed subjects who can move, such as non-human animals. The third group for non-human tags was formed by the tags related to sceneries.

To study human presences in the images, I searched for tags describing people, activities, equipment, infrastructure, and references to local life and services. Since I did not gather any demographic data, it was not possible to distinguish whether a post was made by a visitor or a local resident. Moreover, it is worth noting that in summer, the number of daily visitors to Kilpisjärvi surpasses the local population by a considerable margin. However, I established a category for "engagement," which contains all tags about people, activities, and infrastructure or equipment related to outdoor activities, recreation, or tourism. In the last group, "culture," are all the aspects of the purposefully built infrastructure that enables the life in the area but are not primarily intended for tourism use, such as houses, farms, fences, vehicles,

as well as any tags related to cultures, such as Sámi or, for example, music. The five categories—nature, animals, landscape, engagement, and culture—are presented in Table 5 below with examples of what kind of tags each category encompasses. Using SSPS, I grouped the image and text content tags from Facebook and Instagram into new variables in these five categories. As mentioned earlier, the Instagram text tags were so focused on the location and topic that, after initial review, it was obvious that it did not make sense to use the Instagram text analysis here.

Table 5 The five categories used to group all social media data.

Category	Nature	Animal	Scenery	Engagement	Culture
Original tags from the AI analysis	Flora and abiotic elements of nature: tree, flower, plant, branch, rock, snow, etc	Non-human animals and their body parts, both domestic and wild: bee, reindeer, dog, pet, peak, bird, horse, etc	Objects describing a larger landscape or nature type: mountain, sea, beach, forest, meadow, fells, lake, river, dawn, weather, northern lights, etc	Objects describing human body or its parts, and human activity in the outdoors: human, face, running, food, drinking, activities, fishing, etc	Human-made structures not related to outdoor recreation: farm, fence, house, flooring, vehicle, road, boat, ruins, memorial site, etc

After determining how the data should be divided under the five themes, I ran an analysis to see if there were any differences between the categories in each of the study locations. The geographical area in this study is small, so I did not expect to find significant differences. Variations have been found in earlier studies, but in much larger regions (Karasov et al., 2020; Komossa et al., 2020), and I included this analysis to gain insights into using the same methods in smaller areas.

6.3.2 Spatial analyses

For the spatial analysis, I used only Instagram data. The original data had been gathered based on locations identified through either geolocation or hashtags in the posts. However, a challenge arose due to the relatively small size of the research area, approximately 10 km wide and even less in width, resulting in Instagram locations that were not very precise. Therefore, for the spatial analyses, I manually curated for Instagram landscape images, excluding detailed images of plants, animals, or humans. During this process, I observed that some images were taken in locations that differed from their geotags. Therefore, for the following analyses, I relied on the manually provided locations: I recorded the location from and direction in which each photo was taken: north, northeast, east, southeast, south, southwest, west, and northwest. Next, I grouped the locations and assigned coordinates. This manual location analysis was possible because of my familiarity with the area, which allowed

me to identify specific locations. This approach is not viable for handling large volumes of data or for researchers lacking comprehensive local knowledge. However, my objective was to explore the utility of such analysis on a small area, where greater precision is required than what Instagram provides. Additionally, this serves as a test-run for visitor management staff, who would face similar constraints (limited resources and time for manual analysis) but possess intimate familiarity with the area. Therefore, this approach remains effective in that context.

Next, to study how geographic features and tourism infrastructure direct the tourist gaze, I conducted a viewshed analysis using ArcGIS Pro 3 for each location in which images were taken. Viewshed analysis calculates the areas that are visible (or not visible) from a particular vantage point, taking into account factors such as terrain elevation, obstructions, and the observer's height (170cm in this analysis). Since most locations are above the treeline, I did not consider obstructions such as trees. The analysis was conducted to calculate visibility up to a distance of 40 km. I used locations for the calculations as close to the realistic photography places as I could; different lookout points, Saana peak, and Tsahkaljärvi shelter. In each analysis, I included multiple potential viewpoints marked on the map to provide an overview of all possible scenery avaiable from the named trails or locations. This approach allows for a comprehensive understanding of the visual landscape along the trails rather than focusing on the view from a single spot.

Furthermore, I wanted to study whether the focus of the images was influenced by geographical features or possibly other factors. To visualise the similarities or differences between the possible view and photo objects, I incorporated arrows into the viewshed analyses to indicate the directions faced by those taking the images.

In addition to the viewshed analysis, I wanted to study how social media hotspots relate to the ecological landscape of Kilpisjärvi. To do this, I compared the social media content in conjunction with the objective, the nature of Kilpisjärvi. As explained in Chapter Four, the ecology in Kilpisjärvi and its surroundings is unique in Finland. While similar biotopes, vegetation, or species can be found even in greater numbers in Sweden and Norway, Kilpisjärvi has its special character thanks to the climate and soil combination in the area. Kilpisjärvi hosts several species that are hard to find anywhere else in Finland, as well as many globally red-listed species. Many rare vascular species grow along the summer trails and are easily observed.

The 'coordination of information on the environment' (CORINE) is an inventory of 44 different landcover types produced in cooperation with European countries, and it is freely available from, for example, the European Environmental Agency website (European Environmental Agency, 2024). There are five main level landcover categories: 1) artificial surfaces, 2) agricultural areas, 3) forests and semi-natural areas, 4) wetlands, and 5) water bodies. These cover types are divided into four levels of subcategories, each more detailed than the previous. To demonstrate the different landcover types in Kilpisjärvi, I have used the level three definitions in the analysis.

With the overlay of the CORINE landcover data, the Kilpisjärvi summer trails, and the identified social media hotspots, it is possible to discuss how tourism relates to the natural features of Kilpisjärvi and possibly guide the tourist gaze. I did not conduct a separate analysis focusing on animals, because creatures such as butterflies, beetles, and birds are visible throughout the area, particularly in the lush and green regions, and the larger mammals, from Norwegian lemmings to lynx and wolverines, are masters at hiding from people.

6.3.3 Netnographic analysis

Although I had years of prior experience in social media tourism marketing, this research required me to better understand peer-to-peer online communication. My online netnographic non-participating observations helped me as a researcher to more deeply engage with the topics that would arise on social media and, thus, what questions I should ask of the Big Data, which is my data source. Netnographic observations have been used to aid Big Data interpretation in other studies too (e.g. Addeo et al., 2019).

I employed the thick description method (Geerz, 2003) to rewrite my research notes into narratives that take the reader into the context of the social media world and the research project. In the social sciences, a thick description is a comprehensive way of describing human social actions along with accurately describing the context of the observations. A thick description can provide a richer and more nuanced understanding of social actions, making the data more valuable for other social scientists who study similar phenomena (Younas et al., 2023). Therefore, in addition to reporting what I observed online, I describe therein how the online world spilt into my everyday offline world as a researcher, a social media user and a resident in Kilpisjärvi. Kozinets et al. (2014) explain thick description as being the analytical and descriptive output of netnography, through which the researcher provides a detailed description of online events (Kozinets et al. 2014). The quantitative methods demonstrate what has been posted on social media. I provide a context to interpret these posts through netnographic observations and consequent thick description (Lugosi & Quinton, 2018). The thick description in turn aids in describing the human interactions, posts, and reactions in this study, as well as human–computer interactions, algorithms, and virtual–physical world duality (Kozinets, 2020).

These thick descriptions are not direct copies of my notes but narratives combining elements I have recognised as recurring in the research and supporting the narrative of the work at hand (Bailey, 2017). I sometimes combine two or more different events into one description to prevent the possibility of recognising the people involved. These texts aim to put the quantitative data into a broader context, explain how the research evolved, and guide the interpretation of the quantitative data (Kozinets, 2020; Wang, 2013; Younas et al., 2023).

7 Results: Forming the big picture of social media

7.1 How is Kilpisjärvi presented on social media?

The data collection resulted in 3,669 Instagram images with their captions and hashtags and 335 Facebook posts including images and captions. Furthermore, as Table 6 presents, there was a notable amount of time spent on netnographic observations, which resulted in research notes.

Table 6 Social media data sources and collected data.

Data source	Amount and type
Instagram	3,669 images tagged by computer vision programme, outsourced service
	Text captions and hashtags in Excel files (not possible to connect to the original image)
Facebook	335 saved posts including images, captions, and likes coded and sorted in Excel and SPSS
Netnographic observations from Facebook and Instagram	Research notes on mobile phone, personal calendar, and paper notebook based on:
	Over 100 hours of daily observations summer 2019
	Weekly observations and participation in groups 2020–2022
	Offline encounter notes of what I had observed online 2019–2022

7.1.1 Content of Instagram images

The Instagram image analysis conducted by the commercial operator returned 400 distinct tags from the Instagram images, totalling over 21,000 tags across the 3,669 analysed images, as illustrated in Table 7.

Table 7 Number of Instagram images analysed, and tags received.

Location	Images analysed	Images without tags	Total tags	Unique tags
Kilpisjärvi village	907	99	5,185	251
Käsivarsi Wilderness Area	909	101	5,476	237
Malla Strict Nature Reserve	869	82	4,921	203
Saana feel	984	92	6,262	255
All areas	3,669	374	21,844	411

The hundred most common tags, which are presented in Table 8, identify the region as characterised by diverse natural landscapes, a coastal or mountainous area with access to bodies of water such as lakes, lochs, or seas. The presence of terms like mountains, hills, ridges, mountain ranges, and fells implies significant elevation changes and rugged terrain. Additionally, the inclusion of coast, shore, wave, sea, and ocean suggest proximity to coastal areas or at least a strong connection to the sea. Terms related to plants include plant, woody plant, grass, leaf, flower, perennial plant, and autumn. These terms cover a broad spectrum of vegetation, from trees and shrubs to grasses and flowers. In particular, autumn suggests a focus on seasonal changes and possibly deciduous vegetation. Terms related to animals include *canidae*, wildlife, pet, dog, wildlife, deer, fish, and bird, and they encompass both domesticated and wild animals. Terms like sky, cloud, sunlight, and reflection are related to sceneries. Overall, the tags paint a picture of a natural environment.

Table 8 The 100 most common tags given to the Instagram images.

n	tag	n	tag	n	tag
1805	sky	136	sunset	46	public space
1368	mountain	135	tree	38	lane
1220	coast	125	sunrise	38	cliff
1128	cloud	121	winter	38	*canidae*
897	wave	121	snow	37	forest
798	shore	112	grassland	36	sunglasses
782	wilderness	111	person	35	wind wave
767	nature	110	plain	35	beach
759	sea	107	tundra	33	house
756	hill	106	evening	32	flowering plant
627	reflection	105	yellow	31	vegetation
522	plant	101	dusk	29	line art
487	rock	100	monochrome photography	28	fish
422	sunlight	90	pet	26	thoroughfare
418	loch	87	reservoir	26	watercraft
383	ridge	84	soil	26	boat
358	mountain range	82	wildlife	26	head
317	ocean	82	night	25	car
312	morning	81	dog	23	sand
311	lake	77	people	22	deer
291	fell	73	arctic	22	crop
268	highland	69	waterfall	22	road surface
237	grass	68	skyline	22	rapid
226	woody plant	65	branch	22	number
220	field	65	meadow	22	rural area
203	black	63	prairie	21	transport
197	leaf	61	clothing accessory	21	afterglow
182	flower	57	woodland	20	road
168	perennial plant	57	sports	20	asphalt
153	monochrome	55	eyewear	20	flooring
152	river	55	glasses	20	eyeglasses
146	dawn	50	stream	17	star
141	autumn	48	face	17	macro photography
				16	pasture

Categorised tags (Figure 18) show that largest category, with 58% of the tags, was "landscapes," including tags like sky, mountains, clouds, and valleys. This category alone is bigger than the rest of the categories combined, including nature and plants; seasons and light; people, cultures and activities; mood; rocks and soil; animals; among others.

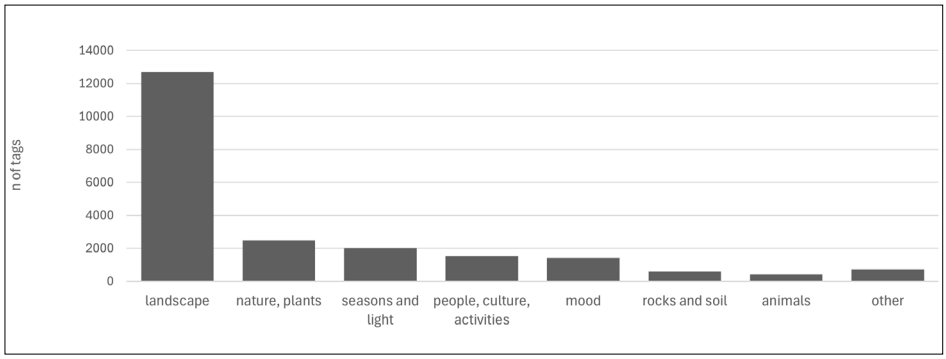


Figure 18 Categorisation of Instagram image tags.

A detailed breakdown of the landscapes category, presented in Figure 19, reveals that bodies of water emerge as the predominant feature among the tags. This prevalence may stem from the image analysis software assigning multiple tags to each body of water. However, upon visual inspection of the images and local familiarity with the area, it is apparent that many pictures from Kilpisjärvi showcase lakes, streams, or waterfalls.

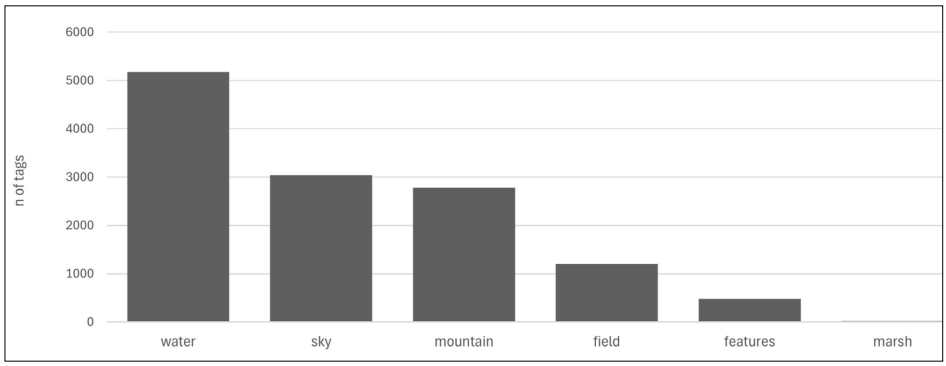


Figure 19 Frequency of different landscape tags in Instagram images.

In the subsequent category, labelled nature and plants (comprising 2,479 tags), various tags related to natural elements, such as "nature" itself (767 tags), as well as plants and their components, are encompassed. Among the most frequent tags within this category were plant (522), woody plant (226), leaf (197), flower (182), perennial plant (168), and tree (135). The limited number of individual plants recognised highlights both the shortcomings of image recognition technology and the prevalence of broader, landscape-oriented depictions rather than close-up shots of plant specimens. I wrote in my research notes:

> I scrolled on #saana on Instagram. Landscape, landscape, landscape, dog, landscape, landscape, landscape, landscape...where were the people, the reindeer, the flowers? Did nobody see the flowers? Taking advantage of the possibility to travel back in time, I scrolled the Instagram posts from past years, and the same images repeated: landscape, landscape, hey—there is a flower, a photo of a cloudberry, landscape, landscape. Flowers really were not that interesting, I concluded after a good two hours. (Research notes, summer 2019)

A total of 2,007 tags were dedicated to describing various times of day, light conditions such as dusk, dawn, or sunset, and different seasons. Additionally, the category labelled people and culture contained 1,514 tags related to individuals, personal equipment, vehicles, and local cultural aspects. People, body parts, or clothing were identified with 391 tags, vehicles with 141 tags, and local culture, such as rural areas, monuments, or ancient history with 56 tags. The category "mood" (consisting of 1,422 tags) incorporated descriptors such as beauty, spirituality, and wild. An interesting observation is that less than 2% of the image analysis tags describe people, even though there were often several tags for the same image: for example, person, face, and nose. Even considering the uncertainty of the image analysis, 2% is very low, considering that Kilpisjärvi is a popular destination and the visitations concentrate in the same hotspots based on the visitor survey, local knowledge, and the spatial analysis of the social media data. The same phenomenon can be observed in my netnographic observation notes:

> I was walking the dog behind Saana one late evening, the silhouette of the popular fell rising strong and dark as the low-lying sun was shining behind me. I could see the Saana trail on the edge of the silhouette and a long queue of people walking along it like little ants. It was high season, and hundreds of people walked the Saana trail every day. The day had been hot, so it seemed many people had postponed their hike and were walking up the iconic fell to see the golden light of the almost-sunset at the end of July.
>
> I tried to count the people; it was hard from where I was standing, but the slowly ascending line seemed to have at least 50–60 people in the few hundred metres I could see. Every now and then, the calm evening air brought the sound of chitchat and laughter.
>
> I walked back home and thought to check if anyone had posted from the peak of Saana already. It should have pretty nice light now to take pictures, so surely someone would have posted already. I was right: there were already two nearly identical images directed towards the low midnight sun over the northern horizon. Not a single person was visible in either of them, even though I had just seen dozens of people walking on the trail. Lots of hearts quickly appeared on both posts. *I should have gone up too, it was so beautiful there*, I thought. (Research notes, summer 2019)

The category "animals" (409 tags) includes, for example, 129 tags for dogs, 90 for pets, but only 27 for reindeer. Originally, there was only one tag for reindeer; however, I consolidated tags such as deer and white-tailed deer into the reindeer category for clarity and consistency based on my knowledge that these animals do not live in the region and are likely to be falsely identified by the image analysis programme. Lastly, there were 714 tags categorised under "other," encompassing descriptors, such as colours, as well as tags considered irrelevant to the region, such as skyscrapers.

In conclusion, the Instagram image analysis, despite some uncertainty, aligns well with expert knowledge of the geographical features of Kilpisjärvi and its surroundings and a visual review of the analysed images. Consequently, the results can be considered indicative of the predominant themes shown in Instagram images from Kilpisjärvi. Moreover, the tag categories correspond with phenomena perceived during netnographic observations, as shown with excerpts from the research notes. However, as previously stated, numerous uncertainties mean that a level of care must be maintained when using the data.

7.1.2 Content of Instagram texts

A total of 17,060 individual words were identified and their frequencies calculated from the Instagram captions and their respective hashtags. The cleaned text resulted in 121 Microsoft Word pages and over 25,000 words. A word cloud of the words is presented below in Figure 20.

Figure 20 Word cloud of Instagram text.

The list of the one hundred most common words used on Instagram (Table 9) shows that visitation location is often mentioned in the posts. The most frequent words identified were Kilpisjärvi, Finland, and Lapland, followed by nature and Saana. The last two terms coincide with the most important visitation motives reported in the 2019 Metsähallitus Visitor survey and observed in the netnographic observations:

> The next post claimed, "*Pakkohan se on jokaisen suomalaisen täällä kerran ainakin käydä elämässään, niin minäkin viimein!*" (It's a must for every Finn to visit here at least once in their life, so finally, I did too!). The post came with a picture of Saana, and had hundreds of likes and a dozen or so comments with cheers, agreement, and comments like, "I have been there too" or "I dream of going to Saana." I call this the "Saana phenomenon": everybody wants to see it, has already conquered it, as they say, or at least agrees that it is some kind of national pride to visit it. That was the amazing thing about these Facebook groups—the sharing of the emotions towards Kilpisjärvi and Saana. I was both puzzled and in awe at it. (Research notes, summer 2019)

As Table 9 of the 100 most common words shows, English is the predominant language in the dataset. However, this data does not allow us to draw conclusions about visitor nationalities one way or another.

Table 9 The 100 most common words in Instagram texts.

Word	Count	Similar Words	Word	Count	Similar Words
kilpisjärvi	623	kilpisjärvi	just	32	just
finland	499	finland, finlande	last	32	last
lapland	338	lapland	sweden	32	sweden
nature	180	natur, natural, naturally, nature	times	32	time, times
saana	154	saana	trip	32	trip, trips
visitlapland	139	visitlapland	finlandia	31	finlandia
visitfinland	89	visitfinland	outdoorfinland	30	outdoorfinland
capes	85	cape, capes	luontoonfi	29	luontoonfi
hiking	84	hike, hiked, hikes, hiking	notes2019	29	notes2019
travelling	79	travel, traveler, traveling, travell, traveller, travelling, travels	magical	29	magic, magical
snowing	78	snow, snowing	features	28	feature, featured, features
laplandfinland	72	laplandfinland	views	27	view, viewing, views
northernlights	70	northernlight, northernlights	first	26	first, 'first
norway	67	norway	enontekiö	26	enontekiö
lappie	67	lappi, lappie	instagram	26	instagram, instagramer
autumn	66	autumn, autumnal	retkipaikka	26	retkipaikka
loves	66	love, lovely, loves	amazing	25	amazing
lakes	63	lake, lakes	capephotography	25	capephotography

winter	63	winter	cold	25	cold
auroraborealis	62	auroraborealis	finnishlapland	25	finnishlapland
reindeers	61	reindeer, reindeers	good	25	good
auroras	58	aurora, auroras	outdoorlife	25	outdoorlife
ourfinland	58	ourfinland	shotz	25	shotz
visited	58	visit, visited, visiting	visitenontekiö	25	visitenontekiö
beauty	57	beauties, beautiful, beauty	borders	25	border, borders
suomi	52	suomi	place	25	place, placed, places
lights	51	light, lights	even	24	even, evening, evenings
photos	50	photo, photos	finnishmoments	24	finnishmoments
saanatunturi	48	saanatunturi	roadtrip	24	roadtrip
mountains	47	mountain, mountaineer, mountainous, mountains	2019	23	2019
northern	47	northern	discoverfinland	23	discoverfinland
photolovers	46	photolovers	scandinavia	23	scandinavia
night	44	night, night', nights	total	23	total, totally
naturelovers	43	naturelove, naturelover, naturelovers	travelphotography	23	travelphotography
naturephotography	42	naturephotography	explore	22	explore, explored, explorers, exploring
earth	40	earth	pelargoni	22	pelargoni
field	39	field	week	22	week, weeks
nordic	39	nordic	beautifuldestinations	21	beautifuldestination, beautifuldestinations
sunsets	38	sunset, sunsets	finnishnature	21	finnishnature
bioartsociety	38	bioartsociety	follow	21	follow, followed, following
outdoors	37	outdoor, outdoors	suomenluonto	21	suomenluonto
arctic	36	arctic, 'arctic	vielä	21	vielä
fells	36	fell, fells	wanderlust	21	wanderlust, wanderlusting
photography	36	photography	winterwonderland	21	winterwonderland
ruska	35	ruska	adventure	20	adventurant, adventure, adventures
happy	34	happiness, happy	colors	20	color, colored, colores, colorful, colors
north	34	north	finnish	20	finnish
onlyinlapland	34	onlyinlapland	lappland	20	lappland
ourlapland	34	ourlapland	today	20	today, todays
thebestoffinland	34	thebestoffinland	visitingfinland	20	visitingfinland

As demonstrated in Figure 21, the most common words in Instagram posts are related to the location (35%): Kilpisjärvi, Finland and Lapland, Saana, but also Norway and Sweden. Another way of marking the visit location is tagging or marking the photo with the hashtag of the local Destination Management Organization (DMO): the word "visit" together with a location name—Lapland, Finland, Kilpisjärvi, or Enontekiö, but also Norway, Tromsø, and Sweden.

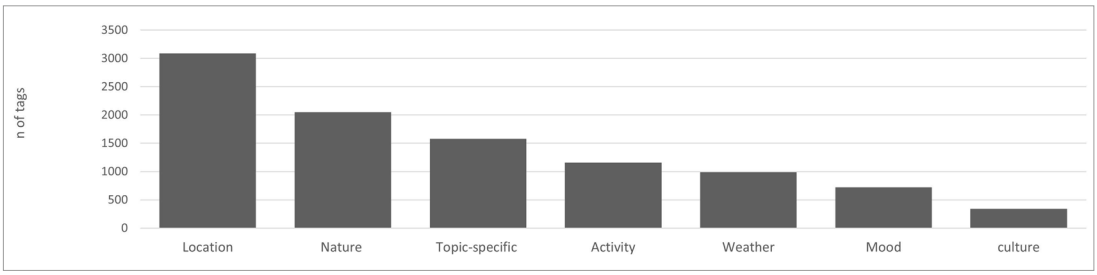


Figure 21 Frequency of words within the Instagram text categories.

The second largest group are the words describing nature: animals, plants, weather, seasons, and geographic features. As presented in Figure 22, seasonal expressions like summer, autumn, or first snow comprise the largest group of nature-related words. They are followed by words describing the aurora borealis (273 mentions), which the computer vision image analysis tagged in 13 images. The category "animals" contains more reindeer (80 mentions) than were recognised from the images (55). Other words in this category were dog (61), fish (21), and animals (30).

The most common topic-specific tags are presented in Figure 23: ourfinland, naturelovers, onlyinlapland, ourlapland, and thebestoffinland were the most repeated. Phrases like visitlapland, visitfinland, ourfinland, ourlapland, thebestoffinland, and visitingfinland indicate a focus on tourism and travel-related content. Terms such as photos, photolovers, Instagram, shotz, and photography, and various hashtags like northernlights and naturelovers, show a presence of photography enthusiasts and users familiar with social media cultures sharing content about the region.

Activities were the next biggest group, encompassing a variety of outdoor activities and experiences associated with travel and exploration. Words describing travelling, photography, and hiking were the most important activities identified, with noticeably higher rates than the next set of activities— adventure, outdoors, and fishing—as can be observed in Figure 24.

The words associated with emotions, like beautiful, love, amazing, good, magic, raw, and awesome, express the wide range of positive moods related to visits in the Kilpisjärvi region. As can be seen from Figure 25, negative moods are rare and mostly describe a challenge rather than an unambiguously negative mood. Spirituality is often related to nature experiences, and Instagram posts from Kilpisjärvi are no exception.

Next, in "culture" are the various words describing people, infrastructure, and cultural features. As can be seen in Figure 26, togetherness is the largest group here, followed by mentions of local culture or life in the region, such as sauna, locals, or village. The word *kota* (traditional Sámi dwelling) was mentioned three times, as was the word "herd". The category "legal structures" includes words such as border and nations.

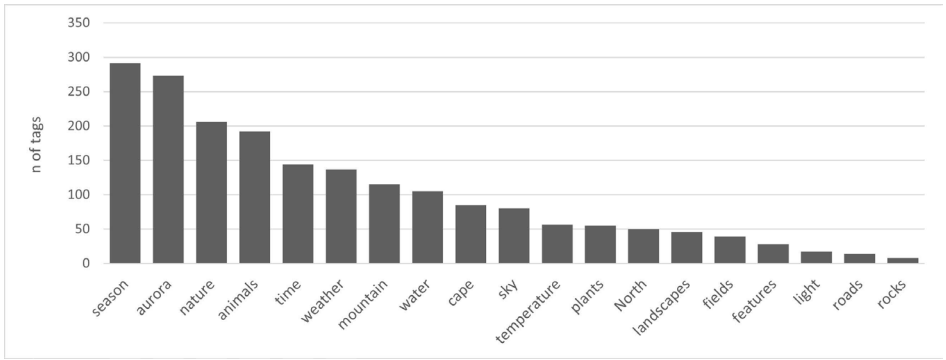


Figure 22 Words describing elements of nature in Instagram texts.

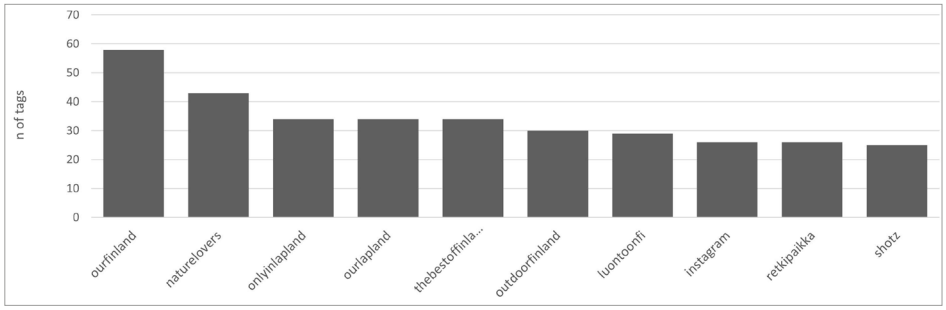


Figure 23 Frequency of topic-specific hashtags in the Instagram dataset.

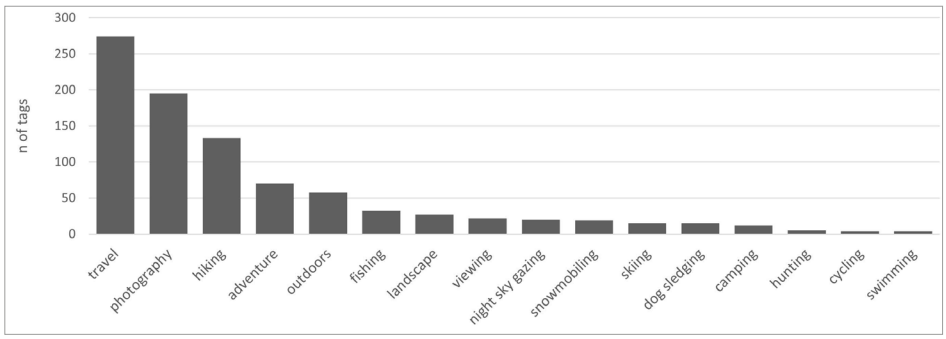


Figure 24 Words describing activities in Instagram texts.

Figure 25 Frequency of words describing moods in Instagram texts.

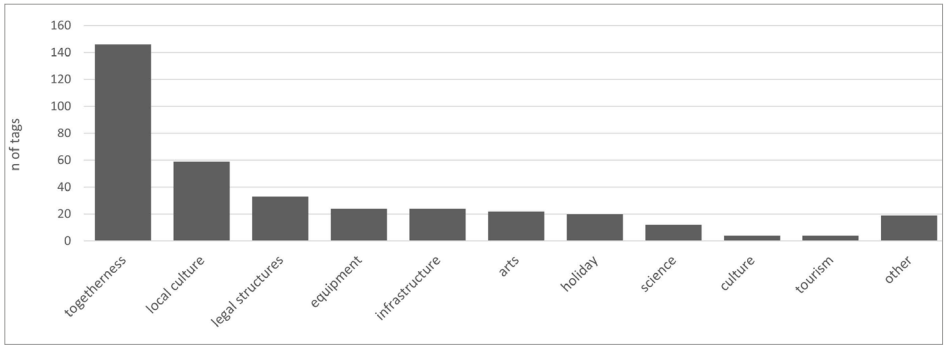


Figure 26 Frequency words describing people and culture in Instagram texts.

7.1.3 Content of Facebook images and texts

There were a total of 335 posts selected for the study. As Figure 27 demonstrates, there are variations between image and caption location, but the overall trend of what locations are most important is consistent. In addition to those locations in the Instagram dataset—Kilpisjärvi, Malla Strict Nature Reserve, Saana fell, and the Käsivarsi Wilderness Area—Facebook included content related to a hiking trail through Malla over to Norway and returning from Sweden (a trail crossing through three countries), the Muotkatakka fell south from Kilpisjärvi, and Norway and Sweden. There were in total 419 locations identified from the text and 334 from the images. One post did not include an image.

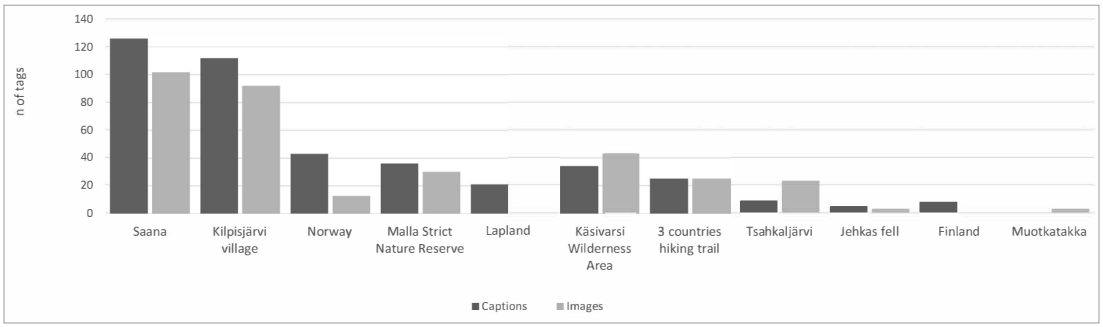


Figure 27 Frequency of locations in Facebook posts.

In some Facebook posts, the caption discussed topics unrelated to the image, while in others, it reinforced the image's message. Below are some examples of the captions; they have been translated from Finnish by the author.

> Flower greetings to the group from Kilpisjärvi! [photo of flowers]
> Somehow even these reindeer seem wilder in the fells than on the roadside.
> First snow in Saana today.
> This view takes my breath away. Literally, the climb was quite hard.
> Pictures from my hike to Käsivarsi! I really wanted to share this experience with the group!
> I didn't know there were so amazing cycling trails in Kilpisjärvi.
> You can follow the ATV trail that the local reindeer herders use here.

These examples demonstrate some of the important themes in the posts. First, there is a sense of togetherness that can be observed; some people even mention that they have been following the group for years and have been dreaming about visiting Kilpisjärvi because of the inspiration from the group. There is also a sense of taking care of each other, as in this example from my research notes:

> Someone posted [on Facebook] asking if anyone knew what happened to a girl they had met on the trail and gave a description of what she was like—alone, inexperienced, and carrying a heavy load. They were worried about her. A couple of people commented about having seen her too, struggling but in good spirits. Soon she joined the conversation, thanking everyone who had helped her along the trail. She said she had not got farther than a few kilometres from Kilpisjärvi in the three days she was in the Wilderness Area and that she had learned quickly that hiking was very different kind of experience to what her expectations had been. Many people reacted with hearts on her reply and encouraged her to keep practising and try again next year. (Research notes, summer 2020)

Table 10 presents the tags assigned to the Facebook images and captions in the inductive content analysis. While the images shared to Facebook focus heavily on landscapes, as do the Instagram images, in the texts the focus is on sharing and explaining one's experience in Kilpisjärvi, talking about the place visited, or mentioning that one has *conquered* a peak.

Table 10 Facebook image and caption tags.

Image tags	**n**	**Caption tags**	**n**
Landscape	143	Experience	109
Saana	29	Place	87
Trails	26	Conquering	25
Human	25	Landscape	11
Dog	22	Asking information	10
No photo	15	Information	10
Reindeer	10	Sharing	7
Flowers, plant details	10	Saana	5
Waterfall, river, or body of water	10	Memories	4
Mountains, peaks	8	No text	4
Boat, pier	7	Beauty	3
Hut	4	Norway	3
Tent, camping	4	Accommodation	2
Bike	3	Complaint	2
Bird	2	Flowers	2
Bonfire	2	Atmosphere	1
Rock	2	Boat	1
Wolverine	1	Camping	1
Drawing	1	Cultural history	1
Fish	1	Greetings to group	1
Kayaks	1	Hardship	1
Kuksa (a wooden cup)	1	Huts	1
Lavu	1	Locals	1
Northern lights	1	Saana	1
Road	1	Me like	1
Rubbish	1	Planning	1
Ruska	1	Show	1
Sunset	1	Silence	1
Trampoline	1		
Total	335	Total	335

The repetitiveness of the shared post content was noticed also by Facebook users when similar images of Saana started to trend. In the research notes I state: "Apparently there are never too many pictures of Saana, which was the conversation of the day today in the [Facebook] group. It is obvious that everyone must post their own picture of Saana now, even an old one if they don't have a new picture. Social media hype. [16.8.2019]."

Similar trends can be observed in the analysis of the relationship between comment tones and photo locations using a crosstabulation analysis. Table 11 below shows the frequency of each comment tone category in the dataset. The crosstabulation of these tones and the photo locations in Table 12 shows that images from Saana and from Kilpisjärvi village, which are often taken towards Saana, gain a lot of comments that belong to the categories "love" and "affirmation." There is a suggestion that the distribution of comment tones varies significantly across different photo locations rather than happening by pure coincidence. While the small sample size (335 images) limits the generalisability of the findings, the result indicates an association between these variables. Similarly significant associations were not detected when comparing images and caption topics with the comment tones.

Table 11 Facebook comment categories.

Category	**Frequency**
Love	90
Affirmation	80
Conversation	45
Awe	20
Advice	10
Negative	10
Encouragement	7
Post had no comments	73

Table 12 Crosstabulation of Facebook image locations and comment tones.

	Saana	**Kilpisjärvi Village**	**Norway**	**Malla Strict Nature Reserve**	**Käsivarsi Wilderness Area**	**3 countries hiking trail**	**Tsahkaljärvi**	**Jehkas fell**	**Muotkatakka**	Total
Advice	4	1	1	2	0	1	0	0	1	10
Conversation	13	15	1	2	9	2	2	1	0	45
Encouragement	3	1	0	1	1	1	0	0	0	7
Love	41	17	3	9	8	10	2	0	0	90
Affirmation	17	26	6	3	11	4	10	1	2	80
Negative	1	4	0	1	2	1	1	0	0	10
Wow	4	7	0	0	2	0	7	0	0	20
No comments	19	21	2	12	10	6	1	1	0	72
Total	102	92	13	30	43	25	23	3	3	334

In summary, the studied Facebook posts focus on Saana and the Kilpisjärvi village area. These posts often attract affirmative comments expressing shared experiences and dreams or admiration. Facebook groups reinforce a strong community bond, enabling members to share information and personal stories about these cherished locations. Despite the data not allowing generalisation, it provides valuable insights into how Facebook content could potentially influence visitors' expectations and behaviour in Kilpisjärvi.

7.1.4 Five groups: Nature, animals, scenery, engagement, and culture in social media from Kilpisjärvi

> There was a picture taken somewhere on the Saana trail, most likely from the viewing point, towards the Malla Strict Nature Reserve. There had been many others just like this: a bit of the lake on the bottom of the picture, the Pikku-Malla and Iso-Malla fell peaks in focus and the Norwegian Barras mountain in the distance. The caption text was about how amazing the nature is in Kilpisjärvi, and lots of heart reactions were left on the post with a few comments about how nowhere else was nature as beautiful as in Kilpisjärvi.
>
> The landscape in the image is breathtakingly beautiful, both in an image and in real life. However, what the "nature" was that the people in the conversation were talking about was not obvious. Yet, everyone seemed to agree.
>
> The landscape was the same one used on many other occasions, for example in Enontekiö tourism marketing or even advertising the Finnish Railways. I took a screenshot (Figure 28) from Finnish Railways website to attach to the dissertation. The nearest train station is in Kolari, 274 km away. The Finnish Broadcasting Company YLE News headline "even a bird is silenced by the beauty of the nature" praised the same landscape in the winning photograph of the Finnish Nature Photography Award in 2016 by Jukka-Pekka Paananen (*Lintukin hiljentyy luonnon kauneuden äärellä – katso upea vuoden luontokuva*; https://yle.fi/a/3-9246771). (Research notes, summer 2019 and autumn 2021)

Figure 28 Landscapes from Saana are used in marketing.
Image: screenshot from www.vr.fi. Text: Hello! Where would you like to travel?

The Instagram image tags were grouped into five categories: scenery, animals, nature, engagement, and culture. The image tags consist mainly (75%) of words describing scenery. Approximately 80% of the tags within the category scenery describe sky, mountains, and bodies of water. According to the tags given by the computer vision programme, greenery and forests are sparce in the images: the number of tags describing any forest types or lush vegetation is very low, only 1% within the category, while the amount tags describing open, tundra-like highland landscapes are nearly tenfold, as can be seen in Table 13 below.

The category animals forms approximately 2% of the total image tags. More than 50% of the category are images of dogs, while there were only 26 images (6% of the category) with the tag deer.[2] When we look at the distribution of the images by area (Table 14), the [rein]deer tags are mostly from Kilpisjärvi village.

As can be seen in Table 13 below, nature tags are more present in Saana (29%) than other locations, animals in the Käsivarsi Wilderness Area (32%), scenery in Saana (29%), engagement in Saana (29%), and culture in Kilpisjärvi village (34%). The observed distribution of the five categories across the four locations show statistically significant differences. The Pearson's Chi-Square value is < 0.001, suggesting that there is a significant association or relationship between the variables (location*category) being tested.

Both categories concerning human presence are scarcely represented, containing some distinct subgroups. Within the category of engagement, tags related to people form the largest group: with the subgroup clothing, they cover over 60%

2 As I have mentioned previously, I interpret deer as reindeer, knowing that the likelihood of seeing a deer in Kilpisjärvi is between none and extremely unlikely.

of the category, as can be observed in Table 13. Nutrition, shelter, or equipment are rarely visible in the images; the subgroup of 75 tags represents 0.4% of all the tags identified on Instagram images. Similarly, equipment for outdoor activities or the infrastructure supporting these activities, such as trails and signposts, are rarely identified in the images. Although these results were cross-checked through visual examination, it is important to note that the image analysis method may encounter challenges in identifying such elements. However, even upon the visual inspection, these elements were seldom prominent enough in the images to attract viewers' attention.

In the category culture, the subgroups related to traveling are prominent, as illustrated in Table 13. Transportation in various forms, from cars to helicopters, and the infrastructure around transport, roads, and piers, form the largest subgroup (44%) of the category, followed by houses and public spaces (39%), such as images of buildings, facades, or roofs. Tags related to local culture and history—monuments, ruins, farming, or gracing—form 14% of this category, or approximately 0.5% of the total number of tags.

The Instagram captions were not grouped into these five categories, but a search for words and tags related to the local Sámi culture and heritage found 80 mentions of reindeer, four of herder, and four of *kota* (traditional Sami dwellings) in the Instagram text. The Instagram image analyses returned 29 tags for reindeer, including the 28 deer tags. In addition, there were 12 mentions of reindeer in the Facebook text and 9 photos. Of the Facebook captions mention the word reindeer, only two discuss reindeer herding, and the rest reference seeing reindeer or reindeer excrement in nature. There are also captions such as "locals on the road" adjoined with an image of reindeer walking on the road.

Table 13 The five main categories of Instagram image tags.

Class	tags	% of tags tags	Content type	% within class	n
Nature	3183	15%	tag *nature*	24%	768
			plant	57%	1812
			rocks / soil	19%	600
Animals	408	2%	Dog / pet	54%	219
			Horse	2%	9
			Fish	7%	28
			Birds	7%	28
			Bugs	4%	15
			Deer	6%	26
			Wildlife	20%	82
Scenery	15986	75%	sky	24%	3870
			mountain	20%	3206
			water	35%	5733
			wilderness	5%	783
			highlands / tundra	6%	976
			time of the day / season / weather	8%	1307
			vegetation / forest / wetlands	1%	110
Engagement	879	4%	person	56%	492
			activity	18%	157
			clothing	11%	93
			shelter, nutrition	9%	75
			equipment	4%	31
			outdoors infrastructure	4%	31
Culture	731	3%	buildings, houses, interior, and public spaces	39%	282
			local culture and history	14%	99
			transport and related infrastructure	44%	321
			food and beverage	4%	29

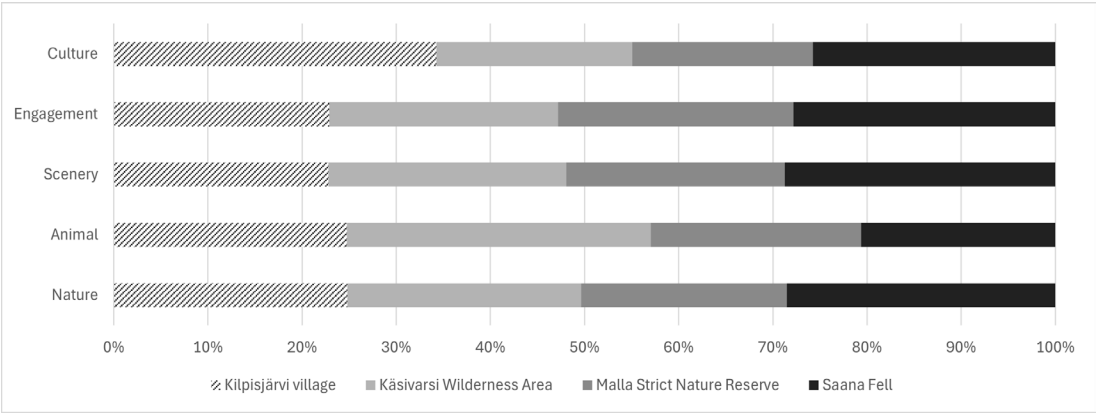
Table 14 Location of the Instagram images with reindeer and dog tags.

Location	Deer	Dog	Pet
Kilpisjärvi village	16	16	17
Käsivarsi Wilderness	2	18	22
Malla	3	27	29
Saana	1	20	22

The divisions of the different Instagram image tag categories between the locations is presented Figure 29. As can be seen, the categories concentrate on different areas rather than being uniformly distributed. The scenery (29%), engagement (28%), and nature (29%) tags have a stronger presence in Saana compared to other locations. As a prominent peak, Saana is a popular destination for visitors seeking breathtaking vistas and awe-inspiring photographs; 27% of all tags were identified in the images from Saana. Many images in the engagement category in Saana are of people and their dogs at the peak of Saana, a moment that many share on social media.

The culture category was concentrated (34%) on images taken in Kilpisjärvi village. Most of the region's infrastructure is in the village; in the other three areas, there are only some trails and wilderness huts. Additionally, all transportation options depart from the village, including helicopters, water planes to the Wilderness Area, and boats to the three-country border (in the Malla Strict Nature Reserve). Consequently, even if one did not use these modes of transport, they may still appear in pictures taken in the village. This content variation between the locations also aligns with local knowledge and netnographic observations. For example, I had noted about the images in the village:

> There was again someone taking a picture of Saana today from the petrol station parking area. I wonder if they notice that the petrol pumps and the houses behind it will be in the image. I am always surprised how people in social media seemed oblivious to the ugly infrastructure in the images of Saana, because they bother me so much. A caption "beautiful Saana" is accompanied with an image where in the forefront there is a parking plot, cars, random house roof and on the background the recognisable shape of Saana. (Research notes June, 2019)



Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	97.272a	12	0.000
Likelihood Ratio	92.63183	12	0.000
Linear-by-Linear Association	1.033993	1	0.309
N of Valid Cases	21331		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 93.62.

Figure 29 Variations in Instagram image tag frequency in the different locations.

A breakdown of the five categories in Facebook images and captions is offered in Table 15 below. It is evident that, while the images primarily fall into the scenery category, the engagement category is the largest for the accompanying captions.

Table 15 Facebook image and caption tags in five categories.

	Facebook images		Facebook captions	
Category	**n**	**%**	**n**	**%**
Scenery	191	60%	39	12%
Nature	15	5%	3	1%
Animal	36	11%	4	1%
Engagement	65	20%	188	57%
Culture	12	4%	93	28%

Local residents were mentioned in 16 Facebook post captions; half of them discussed the accommodation or food services in the village, four referred to reindeer as local people, one mentioned themselves living in the village, one talked about an event in the village, and one mentioned the war history in the region.

Social media posts were sometimes interested in recounting popular stories related to Kilpisjärvi, as evidenced by my research notes. The research notes include an entry about how legends can be considered local narratives on social media. In the spring of 2020, a lengthy discussion unfolded in one of the Facebook groups regarding the beauty and origins of a tale related to the mountains of Kilpisjärvi. This tale of the wedding between two giants, Saana and Malla, is often cited as the origin story of Kilpisjärvi. According to the narrative, Saana and Malla are on the verge of marriage when a jealous suitor named Pältsa from Sweden disrupts the ceremony officiated by Barras. In the ensuing chaos, all participants are turned to stone, and a grieving Malla seeks solace in her mother's arms, shedding tears that give rise to the Kilpisjärvi lake. This tale, written in 1974 by Kaikusalo and Metsälä, is a product of their imagination and contains elements unrelated to Sámi culture or narratives. Furthermore, the story served as the inspiration for a popular pop song, *Haltin häät* originally presented by Taiska in 1976. Despite being written by Finnish Seppänen and Alaspää, the piece incorporated elements reminiscent of *yoik*, traditional Sámi singing. The popular narrative is often regarded as part of the local mythology but no evidence of any connection to the local traditions have been found (Valtonen, 2020). Additionally, the tourism industry promotes known Kilpisjärvi locations using names from this story, such as the Tears of Malla (Kitsi Falls in the Malla Strict Nature Reserve):

> "*There it is, the Tears of Malla, a place I have wanted to see since I was little and learned that song. The story of the birth of Kilpisjärvi is so beautiful, don't you agree!"* Somebody wrote this on Facebook today with a picture of Kitsi falls. The conversation below the image was mostly about how great the song was; the authenticity of the story is not relevant, as now the story belongs to Kilpisjärvi. "*I always start humming that song when I think of Kilpisjärvi*," said someone in the comments. I thought about the tourism brochure we published in Enontekiö in 2012 and acknowledging that it was my idea to include this story in the brochure made me frown a bit. (Research notes, spring 2020)

Finally, by comparing the categories of photo content and captions across the three datasets, we can observe similar trends despite the variations in collection and tagging methods between Instagram and Facebook.

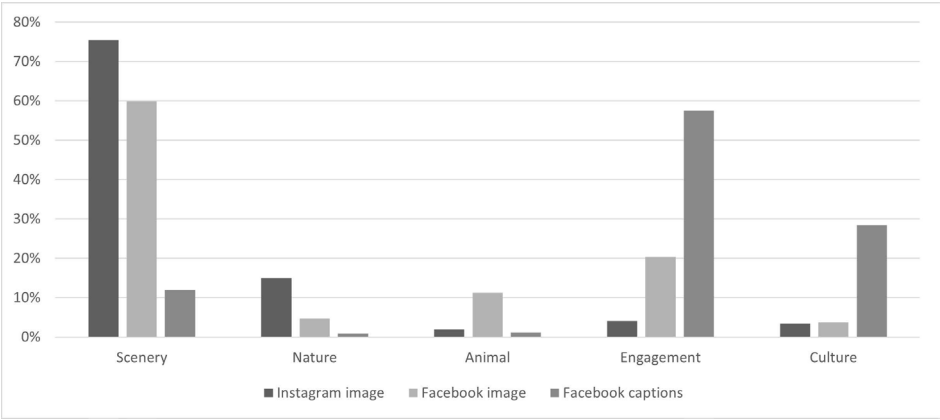


Figure 30 Facebook images and texts and Instagram images in five categories.

The prevalence of the scenery category in the images is unmistakable, as depicted in Figure 30 above. The analysis of the accompanying captions reveals that sharing experiences and fostering a sense of togetherness are also important social media functions. This same togetherness and inspiration that the Facebook groups fostered was also noted in my netnographic observations, as I previously explained about what I called "Saana phenomenon" – everyone wants to see Saana and responds to Saana images with affirmative comments of having been there or dreaming about going there. Another strong example of this inspirational togetherness was this note:

> Today, someone shared a long post on Facebook about their climb up Saana, despite battling a chronic illness. They wrote about their gratitude to everyone they encountered along the way for their encouragement and for not mocking their slower pace. The comments section lit up with cheers and congratulations, and someone expressed gratitude to the author, saying their story gave them hope and inspiration to dream of accomplishing something similar one day despite their own struggles. It was a very heartfelt conversation, and I thought that this is exactly why these social media groups are so important, to encourage everyone to adventure out, at their own style (Research notes, summer 2019)

In summary, the social media images from Kilpisjärvi and the Käsivarsi Wilderness Area predominantly feature scenic landscapes, with vegetation often serving as a backdrop or framing element rather than the focal point. The animals category primarily includes images of pet dogs and reindeer, the latter commonly photographed in the vicinity of Kilpisjärvi village. On the other hand, the categories engagement and culture play a lesser role in the images themselves but hold more significance within the captions accompanying Facebook posts. There is some variation in what categories are more popular among the four areas.

7.2 Social media images in the geographical and spatial context

The manual location identification of Instagram pictures formed a sample of 1,167 images from the different locations around Kilpisjärvi village. The four main locations where photos were taken were Kilpisjärvi village (138 images), Saana peak trail and the guestbook at the peak (366), the Malla Strict Nature Reserve, including Pikku-Malla lookout place, Kitsi-falls, and the three-countries border cairn (385), and Tsahkaljärvi lake (125). These locations are marked in the map below Table 16. The Saana fell is the most popular object in the landscape images shared from the Kilpisjärvi area, followed by images of the Malla Strict Nature Reserve and the easily recognisable Bárrás Mountain peak in Norway (Table 16).

Table 16 Landscapes in Instagram images.

Landscape object in the image	n	%
Saana	323	28%
Malla	261	22%
Bárrás	258	22%
Swedish fells	198	17%
Käsivarsi Wilderness Area	35	3%
Kilpisjärvi	92	8%
Total	1167	100%

The maps on the following pages present what it is possible to see from the above-mentioned locations; the darker the colour, the more places have a view there. In addition, there are arrows on the images showing the direction in which the photographer has pointed the camera. For the reader who is not familiar with the landscapes of Kilpisjärvi, I have added typical views after each map.

As depicted in Figure 31, the views from the Saana trail open over the Kilpisjärvi lake towards the Swedish and Norwegian mountains. The trail leading up to the peak is quite steep, limiting the views ahead to mostly just the slope. It is only as you near the top that the vistas open, offering views of the village (Figure 32) and the Käsivarsi Wilderness Area (Figure 33). Over 50% of the landscape images from Saana are oriented towards the Malla fells, while images facing Sweden constitute the next most popular direction (22%). Images capturing the village (14%) and the wilderness area to the east (9%) are less common on Instagram.

The lookout spots, the first one located right above the treeline and the second at the top of the stairs, also direct visitors to look towards the northwest and north with both their placements and signposts, as I present in Figure 34. The images from here are mostly taken towards the Malla Stirct Nature Reserve (Figure 35 and Figure

36). To catch a glimpse of the scenery heading toward the Käsivarsi Wilderness Area, one must veer off the Saana trail and traverse along the eastern slopes.

The Tsahkaljärvi trail predominantly winds through a birch tree forest, which, while not dense, nevertheless limits views of larger landscapes for most of the journey. However, approximately 100 m before reaching the rest area, the trail ascends above the treeline, offering unobstructed views in all directions (as depicted in Figure 37). The Saana fell stands out prominently in the landscape, and the lean-to shelter is strategically positioned to afford a view towards it. An overwhelming majority of images (95%) captured at Tsahkaljärvi are oriented towards (or depict) Saana (Figure 38), with the remaining landscape images directed eastward toward the wilderness area (Figure 39).

The viewshed analysis conducted from the Malla Strict Nature Reserve, illustrated in Figure 40, reveals visibility in multiple directions from various locations. The summer trail passes through the Strict Nature Reserve, and leaving the trail is not allowed. Among the most common photos are images captured from the three-countries border cairn towards Bárrás in Norway, accounting for 35% of the images (Figure 41). Figure 42 shows Kolttalahti, where the boat transfer between the village and the Malla Strict Nature Reserve has a pier. Additionally, views from the top trail towards the Swedish fells constitute 14% of the images, while those taken from the Pikku-Malla lookout place towards the village or Saana each comprise 4% (Figure 43). However, the largest group of landscape photos shared from Malla consists of images showcasing the landscapes within the Strict Nature Reserve, totalling 44%.

The final viewshed analysis, represented in Figure 44, encompasses locations surrounding the Kilpisjärvi village, including the lookout and parking areas along the VT21 road (Figure 45 and Figure 46), the village centre pedestrian walkway, and the shoreline in front of the oldest hotel in the village. The analysis also includes views from Salmivaara peak (Figure 47). The results indicate that the views predominantly open towards the northwest and north directions, mirroring the direction of images captured towards Saana (56%), Malla (24%), and over the lake towards the Swedish and Norwegian mountains (19%).

Overall, the maps illustrate that the views along all the marked trails tend to showcase the northerly and westerly landscapes, with the Norwegian and Swedish mountain peaks serving as prominent backdrops. This observation is consistent with the findings from social media images, as indicated by the arrows on the maps. The views' importance to the visitors can be observed in the research notes. The Saana trail underwent improvements in 2019–2020 that relocated the trail so that it ascends from the eastern side of the ridge. In this new trail, hikers climb above the treeline and are greeted by the vistas of the Käsivarsi Wilderness Area in the east before reaching the first lookout point where views to the west open. These changes were widely discussed on social media, and I addressed the topic during my visit to the visitor centre:

> "During the building process, they [the Metsähallitus Visitor Centre] received a lot of feedback about the relocation. Some were satisfied with the new, less steep ascent, but many also thought it would ruin the experience because you don't have any views along the way. Based on the scale of discussions for and against the relocation, it seems to me that the trail is important, and views are held dear by the visitors to Kilpisjärvi," said a customer adviser at the Visitor Centre I spoke with today. (Research notes, August 2019)

Finally, as demonstrated in Figure 48, the trails near Kilpisjärvi village wind through green areas characterized by sub-arctic vegetation, including some unique nature types, such as broad-leaved forests with lush undergrowth comprised of grasses, ferns, and other sub-arctic flora. There are also several rare plants along the trail, as was explained in the sup-chapter 4.1. However, based on the evidence of this study, these green areas or individual plants are rarely the object of images shared on social media.

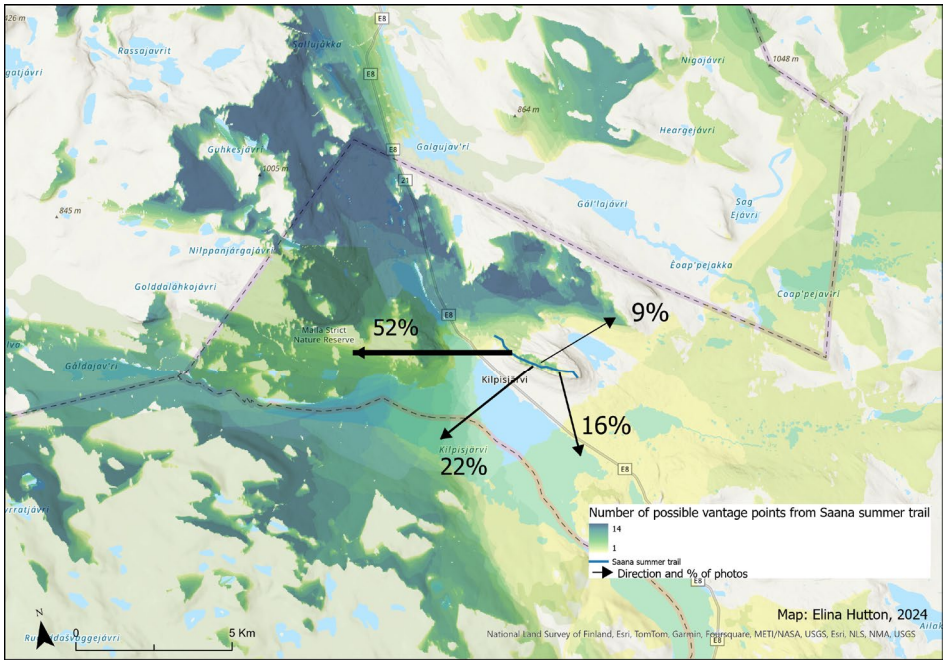


Figure 31 Viewshed analysis from Saana summer trail.

Figure 32 Views from Saana towards the village.

Figure 33 Views from Saana towards the Käsivarsi Wilderness Area

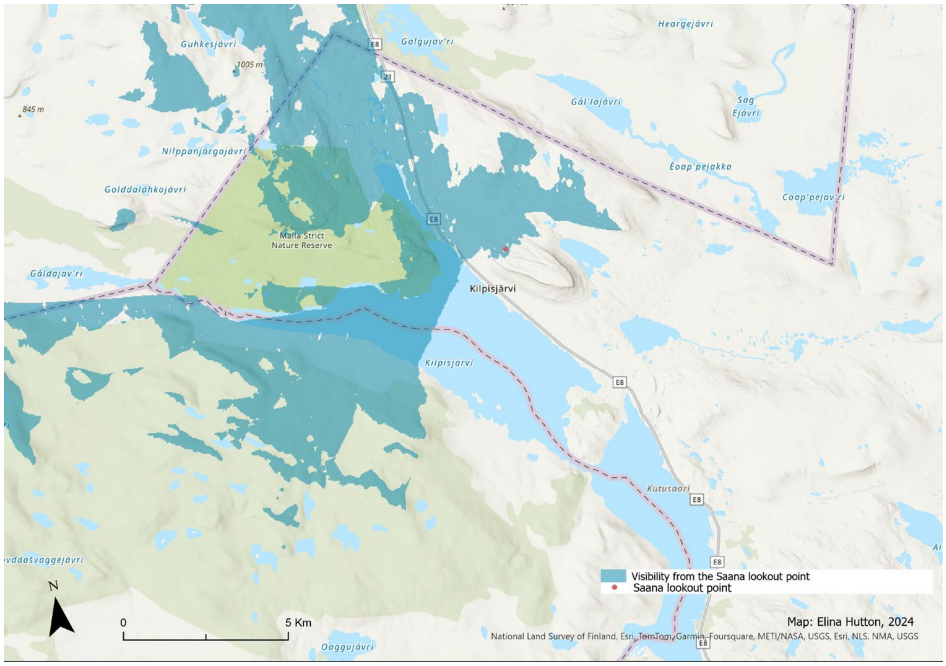


Figure 34 Viewshed analysis of the Saana lookout.

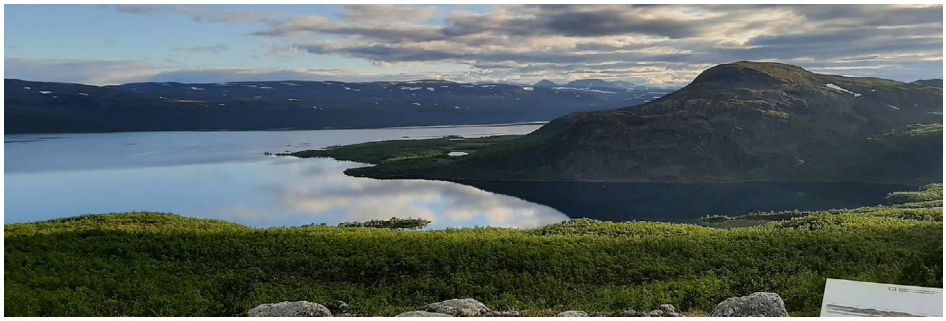


Figure 35 Views towards Malla from the first lookout point at Saana.

Figure 36 Views from top of Saana on the trail toward Sweden.

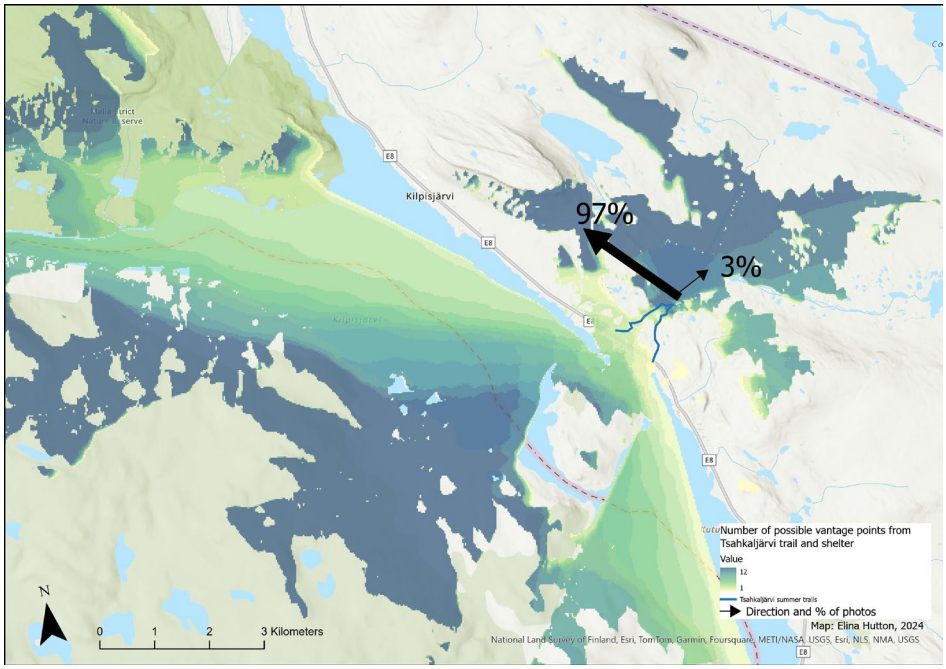


Figure 37 Viewshed analysis of Tshakaljärvi.

Figure 38 View from the Tshalkaljärvi lean-to shelter.

Figure 39 Views form the Tsahkaljärvi trail towards east.

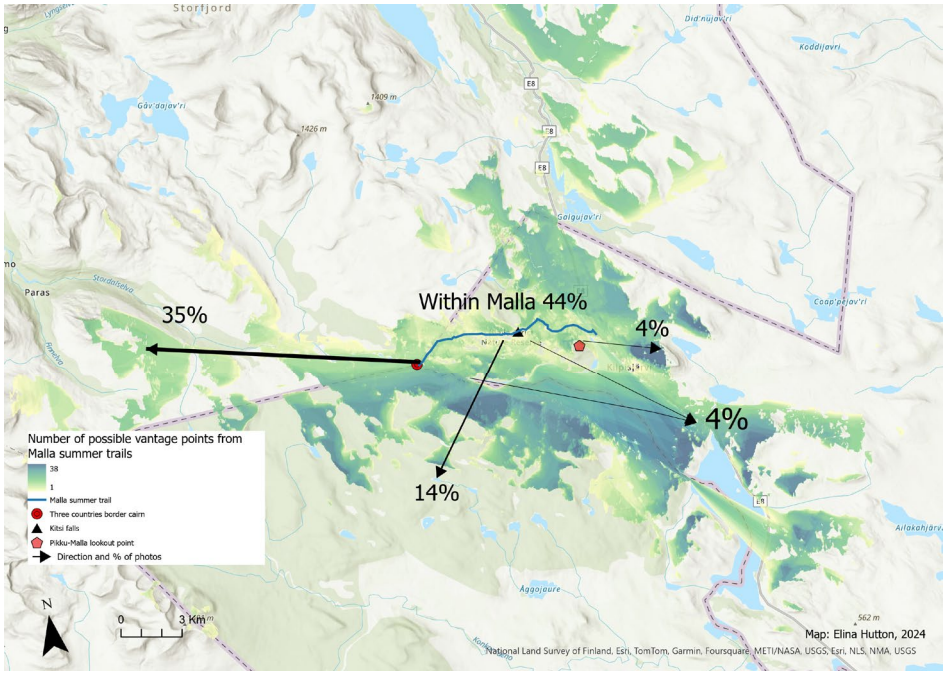


Figure 40 Viewshed analysis from locations in the Malla Strict Nature Reserve.

Figure 41 The three-countries border cairn towards Barras.

Figure 42 View from Kolttalahti towards Saana.

Figure 43 View from Malla summer trail towards Saana.

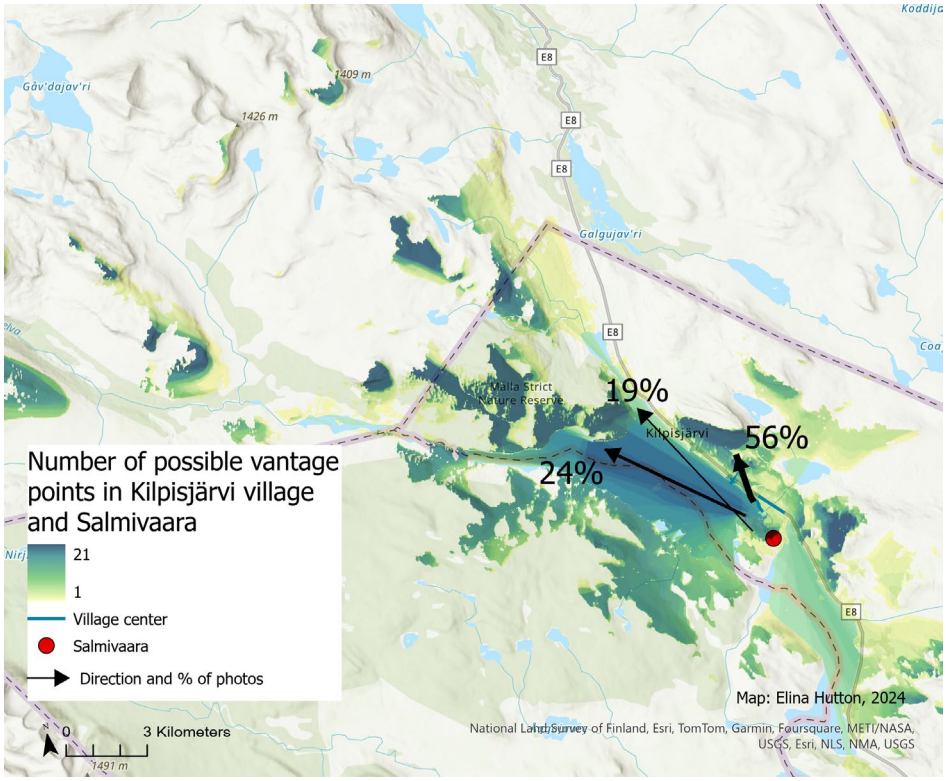


Figure 44 Viewshed analysis of locations in the village.

Figure 45 Saana photographed from a parking area near the village.

Figure 46 Sunset photographed towards Barras from a parking area near the village.

Figure 47 Photograph towards Saana from Salmivaara.

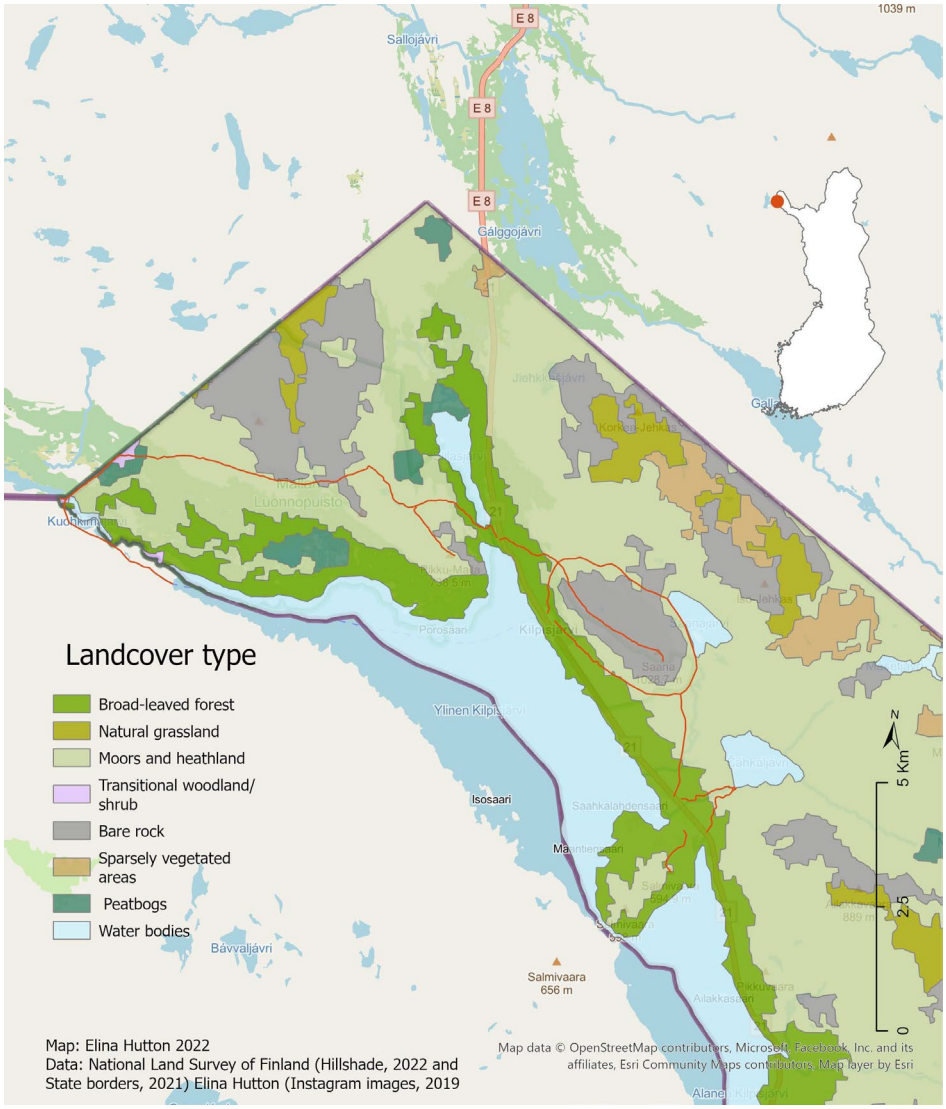


Figure 48 Overlay of CORINE landcover and Kilpisjärvi trails.

8 Discussion: Implications of a nature relationship constructed by social media for visitor management

8.1 Constructing landscapes online

In this discussion chapter, I delve into the implications of the findings presented in the preceding chapter. My study aimed to understand what social media users share about a protected nature tourism destination, how these trends might impact visitors' relationship to the ecological and biological nature, and, eventually, how such information can influence visitor management. Employing a thorough data analysis, several significant patterns and insights have emerged. This chapter explores these findings, examines their relevance to existing literature, and discusses their broader implications for the field.

By utilising multiple data sources and collection methods, the inherent limitations of each approach have been mitigated as much as possible. Similarly, I used various data analysis techniques, including tagging, tag frequency counting, quantitative categorisation, and spatial analyses. A commercial service was used to analyse the images on Instagram using computer vision. As suggested by several other scholars (Y. Chen et al., 2023; Ghermandi et al., 2022; Lv et al., 2022), I reviewed the extracted tags and cross-validated them using local knowledge, data from the 2019 Metsähallitus visitor survey, and netnographic observations to address uncertainties in the tagging. The results were divided into five categories: scenery, animals, nature, engagement, and culture. The data from Facebook and Instagram captions and hashtags were grouped into the same categories to allow comparability of the different datasets.

The various analyses conducted on the collected social media data collectively demonstrate that social media posts from Kilpisjärvi predominantly highlight the expansive open landscapes, with 75% of Instagram images and 57% of Facebook images showcasing the majestic scenery of mountains and lakes for which Kilpisjärvi is renowned in Finland. The small village is nestled between the rolling Finnish fell landscape and the high-rising peaks of Norway and Sweden, and this is visible in the tourism narratives. The Kilpisjärvi lake stretches across the entire length of the village and smaller lakes like Saanajärvi and Tsahkaljärvi are situated along the most popular trails, affording yet more scenic lake views for the visitors.

Viewshed analyses of the most common photo locations reveal that the trails and popular lookout points are located so that geological features frame the gaze and draw the cameras towards the northwest. However, there are also numerous areas where the views extend towards the Käsivarsi Wilderness Area and Finnish fells.

Nevertheless, the viewshed analyses demonstrate that social media content focuses on selected views, partly due to geography and the locations of the trails. Together with the quantitative and qualitative analyses, this highlights the significance of the familiar landscapes to visitors.

Kilpisjärvi encompasses another characteristic that I included in this research: the local flora and fauna, which have long inspired researchers and early tourists to visit the area. Through the analyses, I discovered that social media images depicting elements of nature—whether they be rocks, plants, flowers, or animals—are notably scarce in the dataset collected. The overlay analysis of landcover with trails and popular photo-sharing locations shows the existence of opportunities for viewing these natural elements. The result of this analysis, of course, does not mean that nature photography does not happen in Kilpisjärvi or that those images are not shared within other social media groups or using different hashtags on Instagram. As mentioned before, I have not investigated these possibilities because this study focuses on what is shared in general tourism and outdoor-related groups.

The area I studied is in the middle of an active reindeer summer habitat; however, images of animals on social media are more often of dogs than reindeer. Reindeer are mostly photographed in the village, where male reindeer with big antlers graze in summertime. These reindeer are accustomed to humans and often do not run away, even when approached by a camera-carrying tourist or a fast-moving vehicle. They are easy to photograph with a mobile phone camera. The female reindeer with their newborn calves graze in the surrounding fells and the Käsivarsi Wilderness Area in large herds, but to protect the young ones they are more cautious about approaching people. Photos of other animals were rarely shared in the studied dataset.

Vegetation in the selected social media images typically plays a supporting role rather than being the main object, acting as a frame for the landscape or part of the background, despite the trails passing through lush green areas with sub-arctic flora not found elsewhere in Finland. Likewise, infrastructure was rarely observed in the images or text analysis. These findings align with other research that has concluded that tourism portrays destinations as empty wilderness in promotion and visitors' own imageries (Grimwood et al., 2019; Saarinen, 2005). As Saarinen (2004a) points out, tourism needs the infrastructure, the trails, signpost, roads, and services, but these are framed out from the imagery. Furthermore, Hautala-Hirvioja (2013) and Jokela (2014) describe post-WWII tourism narratives and the imageries of Lapland in very similar ways; grand open landscapes, no people except sometimes an exotic Sámi with their reindeer, and no other animals.

The text analyses reveal that people who have shared posts on Instagram are interested in nature: all five top words used could be thematically placed under the category of "nature," and #naturelovers is the second most popular topic-specific hashtag. This interest in nature corresponds with the 2019 visitor survey results, where observing nature was one of the most important activities and nature and

landscapes were among the most important motivations for visiting the region. The most popular activities, travel and photography, are not surprising either, as most people in Kilpisjärvi travel and photography is an elemental part of Instagram. Photography and hiking also rank high among the most prevalent activities in Kilpisjärvi according to the survey.

In conclusion, the quantitative data analysis reveals a notable prevalence of repeated images from the same locations, predominantly emphasising expansive landscapes. This pattern underscores the significance of large-scale natural settings in the social media discourse surrounding nature tourism destinations. These results indicate that, with precautions taken, it is possible to gain a representative image of what is shared to social media about a destination, even with moderate visitation numbers.

The use of commercially available analysis tools for Instagram images requires care and local knowledge when cleaning and classifying the data. For example, tags related to water were very common, which may stem from the image analysis software assigning multiple tags to each body of water, thus making the category seem more important than it is in the original dataset. Also, tags such as sea, ocean, or deer had to be interpreted based on local knowledge.

8.2 Socio-cultural construction of nature

There are several factors that impact the socio-cultural construction of the narratives about nature surrounding nature tourism destinations. These political and historical frameworks behind tourism development lay the groundwork for the way tourists see a destination. In the case studied here, Kilpisjärvi, social media conversations perpetuate this discourse, often echoing tourism marketing slogans such a "*Kilpisjärven mahtava Saana"* (Magnificent Saana of Kilpisjärvi). Furthermore, as the quantitative analysis exposes, social media repeats the same landscapes that were harnessed into tourism use under the political motivations of a nation recovering from a war (Arminen, 2021; Määttä, 2020; Valkonen, 2003).

The cocreation of the online image of the destination was evident in the social media data collected for this study. The quantitative analyses feature the repetition of similar images of awe-inspiring landscapes and narratives of experiences in the wilderness landscapes followed by togetherness and affirmation in the comments. I was able to confirm the same phenomenon through netnographic observations. These findings resonate with the discussion surrounding how visual representations of places are used by tourists to identify locations worth visiting (Butler, 1990). While the phenomenon has been recognised from the early years of tourism, social media has changed the way anyone can participate in the cocreation of the destination imagery (Iglesias-Sánchez et al., 2020; Urry & Larsen, 2011).

Furthermore, text analyses of social media captions indicate a strong sense of online community. On Facebook, this attachment is apparent through various statements about being inspired and encouraged by the community and wanting to share an experience with others. Comments on posts often express admiration and affirmation. On Instagram, community engagement is often facilitated with popular topic-specific hashtags. However, without more profound analysis, such as examining the comments on Instagram posts, it is challenging to determine whether these hashtags foster a sense of togetherness among users or are employed to enhance post visibility.

Similarly to other studies (Fälton, 2021; Olafsdottir & Karlsdattir, 2013; Perkins & Thorns, 2001; Robinson, 2012), the findings of this research illustrate that social media content reflects awe at the landscape and the delight of experiencing it firsthand. Scenic images, largely devoid of human presence, are accompanied by narratives of personal experiences and a desire to share them with others on social media through group dialogues or hashtags on Instagram.

While some people plan, share, and reminisce about their experience on social media, others who cannot travel find enjoyment in following the experiences of others. Comments among these individuals foster a sense of togetherness despite existing solely in the virtual realm. There is a pronounced feeling of collectively experiencing the destination through online conversations, as evidenced by both quantitative analysis and online observations. This finding is consistent with previous studies on social media communities and their role in constructing social and cultural meanings (C. Liu, 2022; Oliveira et al., 2020).

This observed sense of community and togetherness in social media groups affords the participants the opportunity to discuss and seek advice and inspiration from each other. Social media groups are communities where social and cultural values, as well as codes of conduct, are shared, and therefore they also shape our understanding of and relationship with nature (Oliveira et al., 2020). Albeit more directly on Facebook than on Instagram, the sense of community is, indeed, evident on both platforms in the quantitative and qualitative analyses I conducted. The importance of social interaction and togetherness was higher among social media users than for respondents in the Metsähallitus Parks and Wildlife Finland visitor survey of 2019. The respondents who share their experiences on social media also report enjoying meeting friends and new people during their visit to the region.

I agree with the interpretation of online togetherness forwarded by Urry and Larsen (2013), who describe it as performing learned tourism practices and creating more social media content to be admired by others. Drawing from Smith (2019), I assert that the togetherness and sense of sharing experiences observed in the data analysis in this study are precisely the forces behind the strengthening of the tourist gaze. As observed in social media studies, the correct behaviour offline and online, such as visiting the correct locations and posting the correct images,

make the individual part of the desired community (I. Arts et al., 2021; Oliviera et al, 2020).

Travellers seek inspiration and information on social media (Pop et al., 2022), and studies indicate that peer recommendations wield considerable influence over travel decisions (Abbasi et al., 2023; Iglesias-Sánchez et al., 2020). This trend is also evident in the comments on Facebook, where people frequently mention being inspired by social media to visit Kilpisjärvi and wanting to experience the same. Similar outcomes were observed in the Instagram text analysis. The use of travel and destination-related topic-specific hashtags indicates a focus on tourism and travel-related content. It is notable that the most used hashtags are commercial hashtags used by individual social media users. Using company hashtags on Instagram can serve various purposes, including expressing support for a brand, discovering related content, or conveying belongingness to a community. The underlying motivations for engaging with the platform influence the use of hashtags (Erz et al., 2018). Therefore, investigating these selections could prove advantageous for visitor management, offering insights into the relationship between visitors and the destination.

8.3 How does social media sustain old and create new nature and wilderness constructs?

In the previous chapters, I explained how the touristic representations of nature and wilderness on social media contribute to the hermeneutic circle of constructing the concept of wilderness from the point of view of the visitors. The representations of the destination created online become real in the minds of the visitors, directing the gaze to the expected, as many theoretical papers have explained (Frow, 1991; Bell et al., 2002). These touristic performances, described, for instance, by Edensor (2001) and Larsen and Urry (2011), commodify places and landscapes into consumables. Social media has not created the phenomenon, but it has given this hermeneutic circle a new dimension.

The textual and visual narratives I have studied are born spontaneously, or at least without an outside incentive, such as in commissioned art, marketing photography, or photography requested for research or surveys (Breiby et al., 2023). Nevertheless, the images have common elements and familiar styles from wilderness art history. The images seldomly present people or activities. Social media posts do not indicate that Kilpisjärvi is in the Sámi homeland. Overall, besides the few discussions about tourism services, local people or infrastructure are not visible. The photographs repeat the same image three hundred years into the tradition of wilderness as a place of spirituality, finding oneself, and peace from the modern world. Despite being photographed in the vicinity of the village, the collected social media data portrays open landscapes with distant mountain peaks, local life erased from view,

and perhaps a lonely human standing amongst the awe-inspiring, often monumental scenery.

In the case of Kilpisjärvi, the post-war travel narrative replaced the previous travel stories written mainly by natural scientists. The new narratives were inspired by the pristine landscapes but also by the colonial exotism of the Sámi people living in Kilpisjärvi (see, for example, Kokko, 1966) and, as the research demonstrates, are continuously repeated on social media. The European concept of wilderness or nature worth protecting is rooted in the American wilderness ideology from the late nineteenth century (Sutter, 2007; Tverijonaite et al., 2023), which portrays wilderness as a place untouched by modern human influence (Nash, 2014). This romanticised notion of nature in its pristine state is a prevalent talking point in the nature tourism industry, as well as in travel accounts and social media content (Flad, 2009; Tverijonaite et al., 2023; Weatherby & Vidon, 2018).

Lapland has largely been depicted by individuals from outside the Lapland region, such as tourists, writers, and artists, as discussed, for example, by Tuija Hautala-Hirvioja (1999), and continues to be so today. Even without precise figures regarding the number of Kilpisjärvi residents on social media, it is evident that its portrayal on these platforms is largely shaped by outsiders and visitors. On any given day during summer season, the number of tourists far exceeds that of the local population. Similar imbalances on social media between visitors and locals have been noted by other researchers (see Edwards et al., 2017; Muñoz et al., 2019; Törn et al., 2008). However, studying this phenomenon is challenging because it is often impossible to discern which users are residents and which are visitors. In addition, differences in the posts shared by domestic and foreign visitors in Finnish national parks were detected by Väisänen et al. (2021), who suggest that there is a variance in the content shared between Finns and foreigners. These discrepancies can be difficult to detect because of the obstacles facing the use of demographic information of social media users, but it is nevertheless an area that merits further investigation due to its intriguing nature.

The framing of Lapland as a romantic, pristine destination is used in tourism promotion today (Hall et al., 2019; Tuulentie, 2004). The Romantic era paintings of Finnish Lapland often depict empty landscapes and, rarely, animals or people; if there were animals, it was a reindeer with or without their Sámi owner (Hautala-Hirvioja, 1999). Similar to other social media content studies about the north (see Cassel & Bernandi, 2021; Conti & Cassel, 2020; Conti & Lexhagen, 2020; Fälton, 2021), this study detects "last wilderness" or frontier romanticism in social media.

The images and narratives explored in this study mainly consist of landscapes with a romantic tint. Reindeer are seen as locals or wild, bringing a feeling of the exotic and otherness to the landscape. Similarly, in her work, Emily Fälton (2021) notes that Instagram images from Swedish national parks resemble Romantic-era landscapes:

pristine and unspoiled by the presence of people. Furthermore, the social media wilderness discourse goes beyond the borders of the legally defined Wilderness Area; wilderness is present anywhere in Kilpisjärvi. The Finnish word *erämaa* has thus adopted on social media meanings similar to those of "wilderness" in English. This touristic wilderness landscape on social media, similar to previous studies from Kilpisjärvi (Rantala, 2016; Tuulentie, 2004), Iceland (Sæthórsdóttir et al., 2011), Sweden (Fälton, 2021), or even historically and globally (Cronon, 1996; Saarinen, 2019b; Tverijonaite et al., 2023), display wilderness as pristine and undisturbed from any human activity.

The intriguing aspect of the persisting colonial perspective of domestic tourism highlights the need for further research. Among others, Smith (2018) claims that Instagram is the modern travel writing platform. Unlike traditional media, it is seemingly oblivious to the critique of the colonialism of tourism, continuing to display tourism destinations as products to be consumed by the visitors.

In this light, I maintain that social media follows in the footsteps of old colonial travel narratives in which the visitor is free to consume the destination's landscapes or nature. Social media portrays nature itself as a landscape where local life is absent unless it can represent an exotic otherness. Furthermore, visitors use words like "conquering" the wildernesses and mountains to express their activities. The consumption of the landscapes (Urry, 2002) continues online, where peer users like and admire the shared images, which contributes to the original poster gaining recognition.

8.4 Implications and applications of social media in visitor monitoring and management

It is easy to highlight social media's challenges and potentially harmful implications for managing protected nature tourism destinations. As discussed previously, social media is repeating and reproducing a colonialist image of a landscape to be consumed by the tourist. Visitors to nature destinations leave their homes in pursuit of experience and see what they have already seen on social media; then, to prove that they have done the correct thing, they share the same images and narratives online (Smith, 2018). This repetitive cycle, as witnessed in this study, eventually places pressure on the most popular locations—the most Instagrammable locations—causing increased stress for the trails, infrastructure, and local nature. The proliferation of activities in the area increases disturbances for wildlife even when wildlife is not the visitor's focus (Bergman et al., 2022).

As I have previously mentioned, there are also examples of how social media can be used to monitor wildlife well-being and tourism pressure on nature (Costadone et al., 2023; ElQadi et al., 2017; Papafitsoros et al., 2021). That said, conservation

and visitor management staff must consider the risks of conservation efforts turning into consumable commodities on unpredictable social platforms.

The lack of everyday situations and items in holiday images is not a new phenomenon (Smith, 2018); going on holiday is an escape from one's everyday life. Conti and Cassel (2020) observe that tourists in images posted on Instagram frequently express a desire to break away from their daily routines and immerse themselves in different environments. The lack of everydayness in social media content, as evidenced by my netnographic notes, may lead to a one-sided portrayal of outdoor realities. In the example I presented in Section 7.1.3, there was a strong notion of togetherness and mutual care among the social media community. However, this feeling does not take importance from the fact that the person travelling alone was inspired by social media and consequently ill-prepared, a phenomenon posing potential challenges for visitor management that require attention.

Unlike early travel narratives, the content on social media is not directed by national political or environmental goals. Herein lies both the possibilities and the threats related to the power of social media; someone will nevertheless always have an influencing role in shaping travel narratives. Many examples worldwide have shown how social media influencers and trends have influenced destination selection and visitor behaviour (Magno & Cassia, 2018; Narangajavana et al., 2017; Oliveira et al., 2020), and these trends also concern remote locations like Kilpisjärvi.

Visitor management has the challenge of staying up to date on uncontrollable peer-to-peer advice and recommendations and being informed of where the pressure is increasing. Social media inspires people to explore nature destinations and brings new visitors to protected recreation areas. The traditional visitor monitoring tools, counters, and surveys typically inform management with a delay. Counters are read at the end of the season, surveys are conducted only some years, and their reports can take a long time to be completed and published. I further argue that the detected sense of togetherness is the driving force behind the hermeneutic circle of cocreating the concept of nature in online communities. I argue, therefore, that this togetherness is something that visitor management staff should aim for in their own communication, to be able to become part of and potentially impact the hermeneutic circle.

I agree with K. Arts et al. (2015), who conclude that digital technologies are neither good nor bad in terms of environmental conservation. Similarly for visitor monitoring and management, social media can be used to benefit both visitor services and nature conservation efforts. In light of this research, I claim that ignoring social media's impact on the visitors will lead to negative consequences for nature.

8.5 Limitations and challenges of this research

As the results of this research and several other studies have indicated (See, for example, Barros et al., 2022; Pickering et al., 2018; Tenkanen, 2017; Xu et al., 2020), social media can indeed be a resource-efficient and timely way to monitor visitor preferences and activities, albeit with reservations. I will next discuss the limitations of this study. These limitations can be divided into data collection methods, the reliability and representativeness of the data, quantitative data analysis using computer vision, and the subjectivity of the qualitative analysis

The sampling method employed for the data from Facebook relied on algorithms; thus, there is no way to estimate how representative the sample is. It does, however, provide an example of how any Facebook user could have experienced Kilpisjärvi in the summer of 2019 and, as such, is a pertinent illustration of the netnographic research. Limitations associated with the Instagram data selection involve the outsourced image analysis, resulting in the inability to determine whether the program failed to detect some aspects due to their absence or a lack of training. Moreover, recent research (Berg et al., 2023; Ghermandi et al., 2022) indicates that relying solely on one commercial program may compromise academic rigour. Hence, scholars recommend utilising multiple programs or training the program internally for enhanced accuracy.

The uncertainty of the Instagram image analysis is the most significant pitfall of this research. Thus, the quantitative data and its analysis must not be used as a comprehensive analysis of visitor preferences in Kilpisjärvi. The analysis featured uncertainties related to the tag generation done by the commercial operator's computer vision programme. In addition, not knowing how the computer vision was trained, the tags it generated do not specify the main object of the image. For instance, an image tagged with "sky, mountain, human, plant, branch" could depict various scenes, such as a selfie with a mountain backdrop and a tree branch in the corner or a distant person hiking amidst mountain scenery with foregrounded foliage. Consequently, this analysis merely identifies items in the images rather than pinpointing the primary focus. Moreover, the program may produce multiple tags for the same element, such as "shore, beach, ocean, sea," adding complexity. Local knowledge was essential for accurately interpreting the results, as there is no ocean or sea but rather a large lake in the images. Similarly, the deer tags were interpreted as referring to reindeer based on local knowledge.

I visually reviewed the images to reduce uncertainty and confirm that there were no significant differences between the computer vision analysis and the actual content. Additionally, I verified any further analysis results against my prior knowledge of the area, data from the 2019 Metsähallitus visitor survey, and observations from netnography. Furthermore, differences were detected in this study between the image and text analysis results, demonstrating that relying solely on image analyses

is insufficient for capturing the complete visitor perception of the destination. I have done several cross-checks of the results and used various data sources; therefore, I am confident that the results of this study correspond with the realities of Kilpisjärvi and the level of detail required to answer the research questions.

Qualitative analysis, especially ethnographic research, often includes a degree of subjectivity based on the researcher's background, so I have described my relationship with Kilpisjärvi as my home and my role on social media during the research period. To increase transparency and deepen the quantitative data analysis, I have shared extracts and thick descriptions (Bornakke & Due, 2018) from my research notes.

Finally, this project and any other research on social media is limited by the nature of social media itself. As I have explained throughout this dissertation, social media content is mediated through complex social and cultural rules and expectations, based at least partly on an unknown algorithm produced by a profit-driven corporation. People have different motivations when choosing what they post and which hashtags they use, and one person can have simultaneous overlapping and even contradictory roles on social media. A researcher cannot claim to know what a post means at the individual level without asking why a person chose to share a particular image, text, or hashtags. Hence, instead of asking what visitors' preferences are when visiting a destination based on social media, I have studied the implications of the content visitors share, see, and experience on social media.

9 Conclusions: We protect what we know

This dissertation aimed to study social media's implications for visitor monitoring and management in remote protected nature recreation areas. The research question "What are the implications of social media for visitor management in protected nature recreational areas like Kilpisjärvi and the Käsivarsi Wilderness Area?" was divided into three sub questions: What is posted on social media about visits to Kilpisjärvi and the Käsivarsi Wilderness Area? How does this content reinforce or challenge existing perceptions of nature? What insights do social media and Big Data information-gathering methods offer visitor monitoring?

I confirmed that the repetitive imagery, togetherness, and social media platform dynamics that encourage sharing posts are known to spark positive reactions and strengthen the tourist gaze. As Urry and Larsen (2013) describe, the tourist gaze maintains the romantic and colonial notion of landscapes as consumable commodities. Based on this study's findings and the theoretical foundation upon which it is built, I argue that visual elements on social media platforms create a digital representation or extension of how tourists perceive and interact with their surroundings. These images are consumed online but are also actively performed at the destination through tourists seeking to experience the same landscapes and activities that were previously only admired online. The hermeneutic circle continues when the new visitors share their images and narratives in social media groups and the posts gain likes, admiration, and affirmation: "I have been there too" or "I still dream about going there."

Last, I have examined the implications that social media content has for visitor monitoring and management. The rapid development of tools for analysing Big Data with AI renders this work increasingly accessible and applicable to both research and practical settings. However, researchers have identified several limitations associated with these commercial tools, including uncertainty in the analysis methods, the representativeness of collected data, and the privacy concerns of social media users, as I have discussed. Nevertheless, as I have demonstrated in this study, when data analysis is validated with additional sources, such as visitor surveys and local knowledge, and when the analysis is conducted at a general level without seeking detailed data, it is feasible to utilise readily available tools for visitor monitoring.

Visitor management can thus use social media data to identify which themes and locations attract visitors and address these trends through information dissemination

and infrastructure improvements. Additionally, visitor management must monitor the emergence of misinformation and take proactive measures to address it before it gains traction.

The function of social media is to share the most memorable moments and to seek similar experiences with others online. Thus, the results should not be generalised to represent the touristic experience in a destination; rather, they highlight the most sharable moments of that experience. However, its significance for visitor monitoring and management cannot be ignored: social media is widely used for travel inspiration and sharing experiences with peer groups online. As also proven in this study, it can thus enforce the tendency of visitors' relationships with nture to focus intensely on the wilderness landscape rather than on nature as a biological ecosystem or cultural environment. The emphasis on the photogenic landscapes, desire for likes and comments in social media, and subsequent feeling of belonging to the same social (media) group generates an even stronger draw to taking the right photo at the right location than before.

Balancing between two research traditions, systematic and structured quantitative research and qualitative netnographic research, presented this study with challenges. I have blended spatial analyses, comprehensive local knowledge, and netnographic observations in interpreting the quantitative data, which would have each alone made a reasonable methodology for one research project. However, the strength of this study is precisely in this combination, and I hope I have inspired researchers to open themselves to new perspectives and ways of doing research. Due to this combination of research methods, the methodological contribution of this study is also twofold.

First, this study contributes to understanding the usability and interpretation of social media for research on visitor monitoring in protected areas. There is a growing research literature on quantitative methods for social media analyses, from which I have learned a lot during this process. My contribution to this discussion relates to using these methods in practical settings. Based on the findings of this study, I assert that commercial tools can effectively identify trends and significant phenomena within visitors' social media content appropriately for practical purposes. Hence, this study contributes to understanding the usability and interpretation of social media for research on visitor monitoring in protected areas with moderate visitation numbers.

Moreover, this study adds to humanistic nature tourism studies by introducing new methods for such research. With the rise of AI, these methods will likely become more widely used. In addition, using geospatial analyses to understand human behaviour and phenomena brings new insights into tourism research, especially when there is a need to understand tourism's impact on nature. Furthermore, I have introduced innovative ways of using viewshed analysis to use social media content to interpret visitor landscape preferences.

I have also touched here on several current trends in tourism research, such as an increasing interest in protected nature destinations, social media research, and visitor management, all of which can benefit from my findings. Specifically, I participate in one of the core discussions of social scientific tourism research, the prevalence of the romanticised and colonialist tourist gaze. I have brought new insights into the discourse by studying how social media practices strengthen this gaze.

This dissertation sheds new light onto the tourist gaze in Kilpisjärvi. To the best of my knowledge, such a study has never been previously conducted. Juxtaposing Urry's tourist gaze against historical visual representations of wilderness while taking into account the political history in Finland has not been done in Finnish tourism research. Kilpisjärvi has an iconic role in the Finnish tourism scene, and understanding its development and modern representations provides tools for enhancing more sustainable tourism. Currently, this tourism destination is undergoing intense growth, and at the same time its ecology is under pressure from visitations, tourism infrastructure, and climate change. Thus, understanding how tourism and visitors view the natural environment can inspire better tools for protecting the fragile environment.

Overall, integrating social media data into visitor management strategies holds significant potential for enhancing visitor experiences and ensuring the sustainable management of tourism destinations. Understandings of what captures visitors' attention can allow staff to direct the visitors' view with signs, viewing platforms, rest areas, or photography frames to highlight desired features or views. Based on the insights gained from this study, available commercial tools for analysing social media data for visitor monitoring can be employed, as long as users consider the associated limitations and ensure privacy is protected. Social media alone is insufficient for concluding visitation data; rather, it complements other available visitor monitoring data.

Drawing on this study's results, visitor management in protected recreational areas should encourage visitors to see, look, photograph, and learn about the destination's protected ideology by making information about ecological and cultural values, human impact on nature, effects of climate change at the destination, or other threats to nature readily available beyond the information displayed at trailheads or visitor centres. Similarly, the placement of lookout points and trails can strengthen or change the focus of the gaze by rendering visible grand landscapes, which can redirect the touristic gaze.

However, given the significance of social media as an inspiration given the desire to produce similar images as have been seen before, it is also crucial for visitor management to critically consider where and how to encourage and facilitate visitor interest. This consideration should be applied in the field, as well as in their social media content. Visitor management should refrain from posting images that the visitors should not be taking, such as drone images in birding areas, dogs without

leashes, or close-up images of wildlife that might inspire visitors to attempt to capture similar images.

Considering the evident power of social media, I am both excited and concerned about the rise of social media sites like iNaturalist, which invite people to observe, monitor, and report species. On the one hand, they encourage users' interest in nature; on the other, I fear they will encourage people to seek the most exotic species in search of the admiration of fellow site users. In early 2024, several species were already marked in the restricted areas of the Malla Strict Nature Reserve.

Nature tourism is the fastest-growing industry globally, and social platforms are the fastest-growing media of our times; hence, even more contributions to research around such social media content are needed. This study contributes to tourism research by confirming how the tourist gaze develops on social media, influenced by uncontrollable and unknown algorithms and via cultural and social practices. It also highlights the importance of and need for further research.

In this study, I used social media data from only one season in 2019, which only provides a glimpse of what that summer looked like on social media. However, data from social platforms is available indefinitely, so long as the user doesn't delete the post or change their privacy settings, or the platform does not close access off. Therefore, social media data lends itself well to longitudinal data collection. In addition to a longitudinal study, it would be interesting to study the differences in how the touristic construct of nature is presented in social media posts globally across nature destinations. Including various locations in a study would allow interpretations of how other factors, such as the visitor management practices implemented, impact social media content. With the aid of developing analysis methods, it is possible to study large amounts of data, which allows researchers to investigate how representations of nature have changed over time or space on social media.

The current literature on social media in visitor monitoring focuses on developing appropriate quantitative research methods, but I also call for more qualitative and mixed-method research on the theme. Based on this study's experience, I identify a need for thickening the quantitative data analyses using qualitative methods and further theoretical discussions. In addition to learning how to use social media data for visitor monitoring and management, we are just beginning to gain a deeper understanding of how social media shapes visitors' relationships with nature and, thus, visitor behaviour in protected nature tourism destinations. Furthermore, social media is accompanied by fast-appearing AI applications, such as mobile phone apps, which visitors can use to identify plants more easily than before. To stay ahead of—or even on par with—the development, more research is required on what roles mobile phones, social media, and applications using AI or virtual or augmented reality have in the production of nature-connectedness in outdoor activities and nature tourism.

We cannot protect what we do not know (Rolston, 1997, p. 40). If wilderness is nothing but a landscape image on social media, or if nature is a term simply used to describe a consumable view, what in it is worth saving? That kind of nature is detached from humans and, as such, is not a sustainable one. Instead, we must find a nature we are part of and see it for its value: for its own sake, not because of its use or pleasure for us. Nature is important because it exists.

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Appendix 1

Metsähallitus Parks and Wildlife Finland Visitor Survey 2019 in Kilpisjärvi and Käsivarsi Wilderness Area, selected results

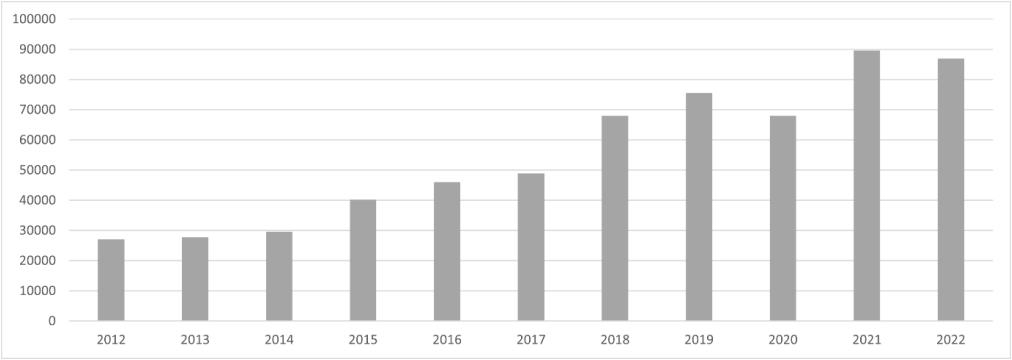

Figure A1.1 The number of overnights in Kilpisjärvi has been in steady growth even during the COVID-19 pandemic. Tourism overnight statistics 2012-2022 Visit Finland.

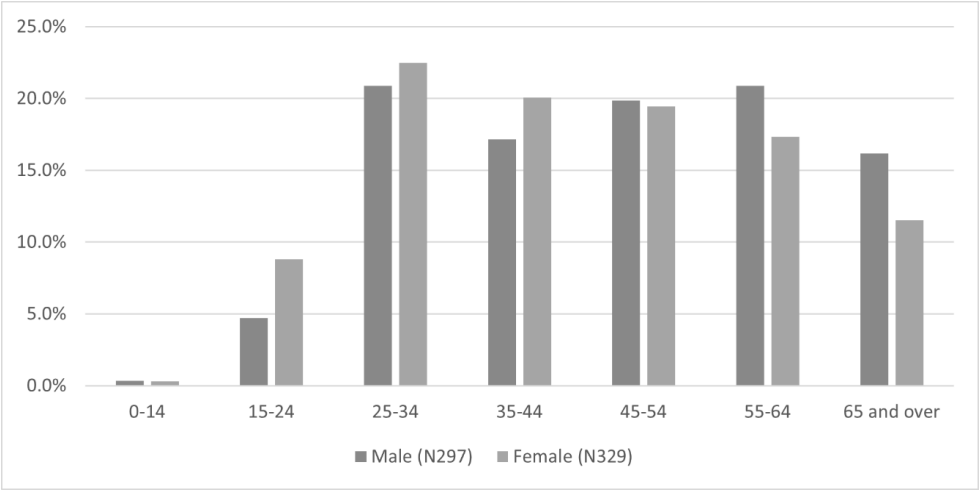

Figure A1.2 Kilpisjärvi and Käsivarsi Wilderness Area visitor demographics in the Metsähallitus 2019 visitor survey.

Table A1.1 Visitor demographics in Northern Finnish national parks

Parks and Wildlife Finland survey, year	Avera age	Largest age group	Domestic visitors	1st time visitors
Kilpisjärvi and Käsivarsi Wilderness Area, 2019	45	25-34	77%	37%
Käsivarsi Wilderness Area, 2009-2010	46	45-54	92%	42%
Pallas-Yllästunturi NP, 2016	54	65+	96%	16%
Urho Kekkonen NP, 2017	53	55-64	95%	23%

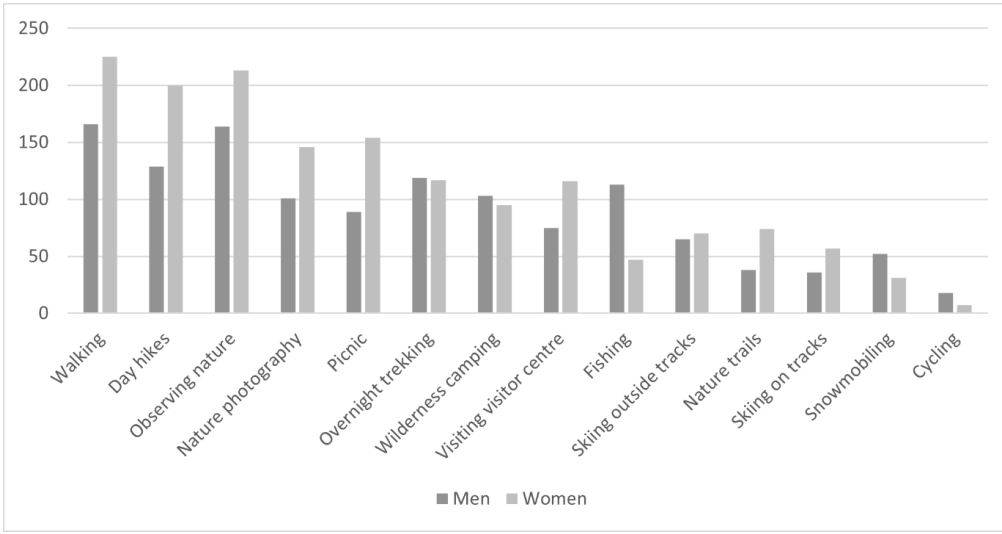

Figure A1.3 Most important activities in Kilpisjärvi and Käsivarsi Wilderness Area

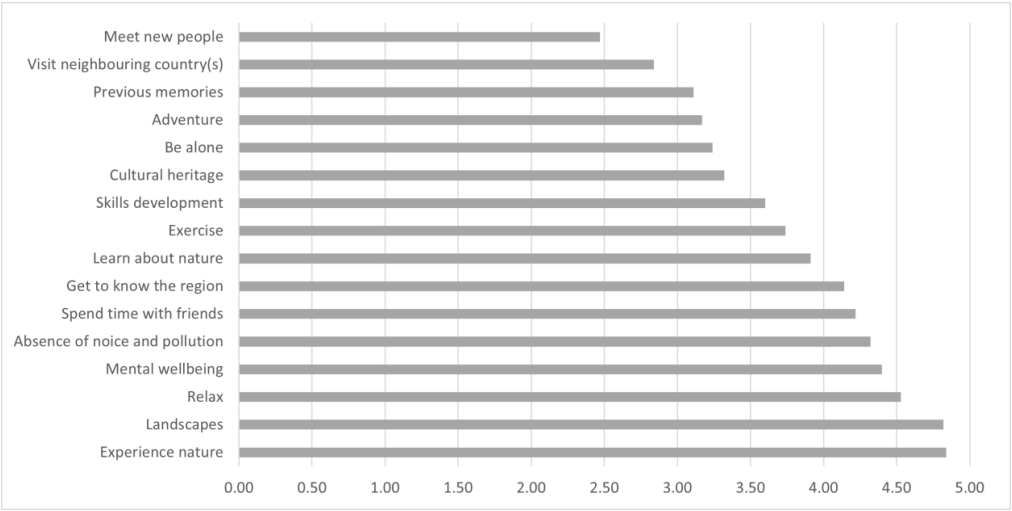

Figure A1.4 Motivations to visit Kilpisjärvi and Käsivarsi Wilderness Area

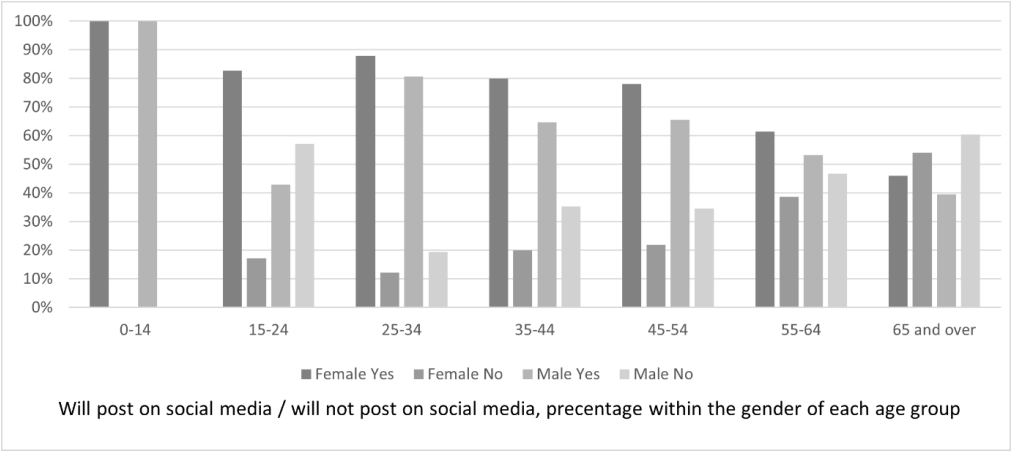

Figure A1.5 The intention to share something about the visit on social media by age and gender.

Table A1.2 How the visitors use social media related to this visit to Kilpisjärvi.

Which social media platforms do you use to post about this visit?		Facebook	Instagram	Flickr	Twitter	Other
	n	397	321	25	4	110

Will you tag the location on the posts about this trip?		Phone location	Goetag	With hashtag	I don't share location	I don't know
	n	186	284	128	118	102

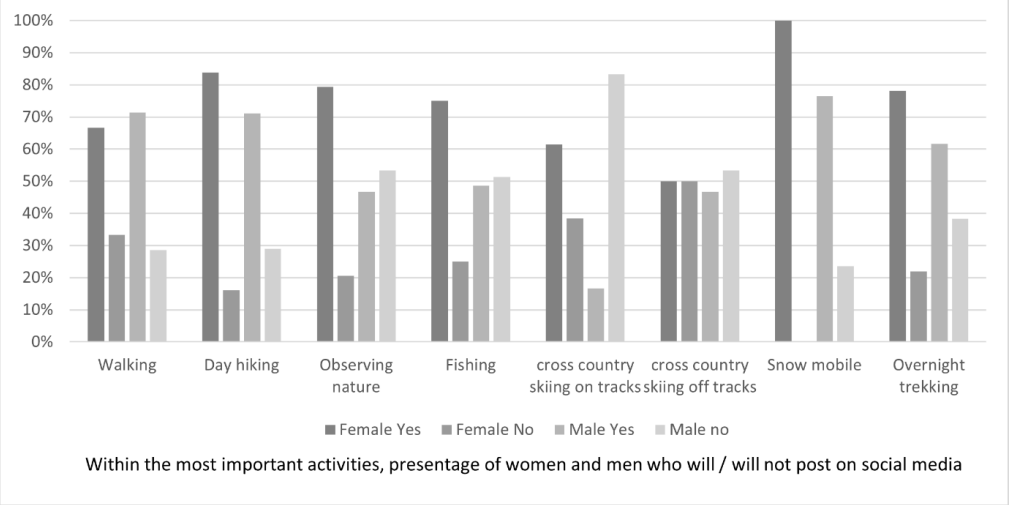

Figure A1.6 Intention to share on social media by activity and gender.

Appendix 2

Computer vision analysis of Instagram images, all labels divided by study area

Kilpisjärvi village		Käsivarsi Wilderness		Malla		Saana	
sky	388	sky	452	sky	424	sky	523
cloud	262	mountain	333	mountain	322	mountain	418
coast	254	coast	305	coast	275	coast	367
wave	195	cloud	268	cloud	247	cloud	342
nature	167	wave	241	wilderness	226	wave	276
wilderness	164	shore	206	shore	176	shore	249
shore	154	hill	202	nature	175	nature	241
hill	152	sea	193	wave	174	sea	240
reflection	147	nature	172	hill	173	hill	222
sea	143	wilderness	170	sea	167	wilderness	218
loch	100	reflection	158	rock	138	reflection	184
ridge	82	rock	124	reflection	131	plant	181
rock	76	sunlight	122	ridge	121	rock	147
ocean	71	plant	96	plant	107	loch	138
black	70	field	94	loch	103	sunlight	126
highland	67	morning	93	mountain range	96	lake	117
morning	67	ridge	87	fell	83	ocean	109
lake	66	mountain range	85	lake	75	mountain range	108
mountain range	63	ocean	85	sunlight	75	ridge	89
woody plant	63	grass	74	highland	65	morning	87
grass	57	loch	73	grass	60	woody plant	77
fell	54	fell	72	yellow	58	fell	72
flower	53	highland	67	morning	55	leaf	67
leaf	51	sunset	50	field	50	highland	65
monochrome	44	dawn	49	ocean	48	perennial plant	62
perennial plant	42	flower	49	woody plant	48	autumn	59
autumn	41	lake	49	river	45	tree	53
sunset	38	black	48	black	36	flower	51
dawn	35	leaf	48	grassland	35	black	46
tree	35	sunrise	46	perennial plant	34	monochrome	46
field	32	winter	43	tundra	32	river	46
sunrise	32	snow	42	leaf	30	grass	44
night	29	plain	41	pet	29	field	41
evening	27	grassland	37	dog	27	monochrome	35
monochrome	27	dusk	35	flower	27	person	33
person	27	woody plant	35	reservoir	27	snow	33
winter	27	monochrome	34	monochrome	26	winter	31
soil	25	evening	33	person	26	skyline	26
tundra	25	tundra	33	dawn	25	dawn	25
snow	24	river	32	plain	25	sunset	24
branch	22	night	27	tree	24	pet	22
people	22	perennial plant	27	dusk	22	reservoir	21
yellow	21	sports	26	prairie	22	sunrise	21
dusk	20	wildlife	26	meadow	21	arctic	20
lane	20	arctic	25	waterfall	21	dog	20
reservoir	20	fish	25	clothing accessory	20	people	20
woodland	18	person	25	people	20	branch	19
pet	17	autumn	23	snow	20	dusk	18
arctic	16	tree	23	soil	20	evening	18
car	16	clothing accessory	22	winter	20	stream	18
deer	16	pet	22	evening	19	soil	17
dog	16	monochrome	21	sunrise	19	public space	16
thoroughfare	16	prairie	21	sunset	19	tundra	16
waterfall	14	soil	21	autumn	18	waterfall	16
sports	13	skyline	20	eyewear	18	wind wave	15
face	12	eyewear	19	glasses	18	woodland	15
road	12	glasses	19	cliff	16	grassland	14
stream	12	dog	18	face	15	plain	14
prairie	11	reservoir	18	monochrome	15	face	13
star	11	waterfall	18	woodland	15	clothing accessory	12
vegetation	11	meadow	17	night	14	eyewear	12
forest	10	beach	15	stream	13	glasses	12
house	10	cliff	15	branch	12	wildlife	12
transport	10	people	15	canidae	12	yellow	12

aurora	9	sunglasses	15	forest	12	lane	11
crop	9	yellow	14	sunglasses	12	meadow	11
road surface	9	branch	11	arctic	11	night	11
wind wave	9	canidae	11	skyline	11	prairie	11
asphalt	8	sand	10	wildlife	11	canidae	10
boat	8	house	9	head	9	house	10
watercraft	8	line art	9	sports	9	line art	10
beach	7	rural area	9	vegetation	9	forest	9
clothing accessory	7	woodland	9	eyeglasses	7	head	9
dish	7	afterglow	8	trail	7	sports	9
highway	7	bird	8	flowering plant	6	beach	8
line art	7	boat	8	hiking	6	boat	8
mist	7	face	8	watercourse	6	clothing	8
rapid	7	flowering plant	8	wildflower	6	flooring	8
wheel	7	macro photography	8	beauty	5	skyscraper	8
eyewear	6	watercraft	8	blossom	5	tower block	8
fjord	6	boating	7	sand	5	vegetation	8
glasses	6	number	7	wind wave	5	watercraft	8
number	6	stream	7	asphalt	4	crop	7
afterglow	5	forest	6	backpacking	4	landmark	7
cliff	5	skiing	6	beach	4	number	7
head	5	text	6	boulder	4	room	7
wildflower	5	wind wave	6	building	4	rural area	7
arctic ocean	4	blossom	5	house	4	sand	7
cuisine	4	crop	5	lane	4	sunglasses	7
eyeglasses	4	fire	5	pasture	4	thoroughfare	7
flooring	4	flooring	5	public space	4	wood	7
galaxy	4	rainbow	5	rapid	4	car	6
meal	4	rapid	5	road surface	4	rapid	6
moonlight	4	recreational fishing	5	rural area	4	road	6
purple	4	shack	5	transport	4	dish	5
sun	4	ski	5	wetland	4	eyeglasses	5
adult	3	steppe	5	afterglow	3	freeway	5
cycling	3	asphalt	4	bedrock	3	logo	5
floristry	3	beak	4	bird	3	pasture	5
flower arranging	3	building	4	boating	3	rainbow	5
freezing	3	eyeglasses	4	clothing	3	road surface	5
frost	3	fishing	4	deer	3	transport	5
hair	3	hiking	4	flooring	3	wetland	5
ice	3	hunting	4	fluid	3	afterglow	4
macro photography	3	ice	4	fun	3	asphalt	4
midnight	3	mountaineering	4	grazing	3	furniture	4
mountain pass	3	pasture	4	line art	3	mist	4
pasture	3	public space	4	liquid	3	roof	4
petal	3	road surface	4	marsh	3	bike	3
portrait	3	wood	4	monument	3	dress	3
ruins	3	aircraft	3	mountaineering	3	facade	3
ship	3	bike	3	nose	3	fjord	3
wood	3	clothing	3	alcoholic beverage	2	flowering plant	3
alcoholic beverage	2	dish	3	beer	2	frost	3
baked goods	2	head	3	boat	2	highway	3
blossom	2	helicopter	3	bottle	2	ice	3
bottle	2	lane	3	car	2	macro photography	3
child	2	logo	3	drink	2	marsh	3
facade	2	mist	3	golden retriever	2	monument	3
floral design	2	nordic skiing	3	hair	2	mountaineering	3
fluid	2	rotorcraft	3	hut	2	nose	3
hiking	2	ruins	3	macro photography	2	pond	3
lawn	2	star	3	number	2	sweater	3
lilac	2	telemark skiing	3	purple	2	track	3
liquid	2	thoroughfare	3	ruins	2	watercourse	3
man	2	vegetation	3	steppe	2	aurora	2
monument	2	walking	3	sun	2	bird	2
sail	2	watercraft rowing	3	temperate broadleaf	2	blossom	2
sailing	2	window	3	twig	2	breakfast	2
silhouette	2	arctic ocean	2	walking	2	campfire	2
snowmobile	2	aviation	2	watercraft	2	cardigan	2
text	2	barn	2	adolescent	1	cliff	2
track	2	bass	2	adult	1	cycling	2

trail	2	butterfly	2	army	1	drink	2
violet	2	campfire	2	aurora	1	driving	2
wetland	2	canoeing	2	barn	1	equidae	2
white-tailed deer	2	deer	2	bike	1	finger	2
wind	2	fog	2	black frame	1	fire	2
aircraft	1	frost	2	blond	1	fluid	2
arena	1	helicopter rotor	2	border collie	1	fog	2
auto racing	1	highway	2	brown hair	1	grave	2
aviation	1	hut	2	bumper	1	hand	2
barn	1	invertebrate	2	cleavage	1	haze	2
barren ground	1	landmark	2	crop	1	hearth	2
beauty	1	lawn	2	dock	1	horse	2
bird	1	midnight	2	facade	1	liquid	2
black hair	1	moths and	2	family car	1	mare	2
bonfire	1	mountain bike	2	fish	1	meal	2
boulder	1	mushroom	2	fjord	1	moisture	2
brown hair	1	paddle	2	flightless bird	1	mudflat	2
cake	1	plateau	2	fog	1	plant stem	2
campfire	1	purple	2	galaxy	1	sign	2
ceiling	1	road	2	goggles	1	sleeve	2
cheetah	1	room	2	headstone	1	spider web	2
clothing	1	shorebird	2	ice	1	star	2
cumulus	1	skyscraper	2	landmark	1	string instrument	2
dessert	1	tent	2	lavender	1	text	2
driving	1	tower block	2	long hair	1	trail	2
eye	1	transport	2	midnight	1	travel	2
eyebrow	1	watercourse	2	military	1	walkway	2
family car	1	wetland	2	mist	1	wheel	2
fence	1	wind	2	mountain pass	1	acoustic guitar	1
fire	1	adult	1	plateau	1	acoustic-electric	1
fountain	1	alcoholic beverage	1	portrait	1	adolescent	1
fruit	1	alpine skiing	1	red sky at morning	1	adult	1
furniture	1	ancient history	1	relief	1	alcoholic beverage	1
grove	1	angling	1	residential area	1	arachnid	1
haze	1	aquarium	1	rubble	1	australian terrier	1
horn	1	archaeological site	1	sail	1	bare upper body	1
horse	1	arm	1	sedan	1	barechested	1
insect	1	aurora	1	shack	1	barn	1
invertebrate	1	backpacking	1	ship	1	bass guitar	1
lifebuoy	1	badlands	1	silhouette	1	bay	1
limb	1	beer	1	space	1	beauty	1
lunch	1	bird nest	1	sports car	1	bed	1
marsh	1	bottle	1	spring	1	bed sheet	1
meat	1	boulder	1	star	1	bedroom	1
motorsport	1	bud	1	statue	1	beer	1
passenger ship	1	camping	1	stone wall	1	beer bottle	1
piste	1	cap	1	tarn	1	black frame	1
pond	1	car	1	text	1	boardwalk	1
rear-view mirror	1	city	1	track	1	boating	1
rotorcraft	1	cockpit	1	trunk	1	bottle	1
sand	1	coral	1	valley	1	bridge	1
selfie	1	cycling	1	walkway	1	bumper	1
sign	1	dock	1	wind	1	cable-stayed bridge	1
sitting	1	door	1		0	cairn terrier	1
ski	1	drink	1			camping	1
smoke	1	duck	1			campsite	1
sports car	1	fence	1			ceiling	1
stadium	1	finch	1			chair	1
stage	1	finger	1			child	1
steering wheel	1	fjord	1			coffee cup	1
table	1	fluid	1			cuisine	1
tarn	1	freezing	1			cumulus	1
tent	1	french fries	1			cup	1
truck	1	fruit	1			deer	1
twig	1	fungus	1			dock	1
visual arts	1	galaxy	1			dome	1
walkway	1	hair	1			drawing	1
		hamburger	1			drinkware	1
		hand	1			duck	1

harbor	1
haze	1
hearth	1
insect	1
labrador retriever	1
larch	1
lark	1
light fixture	1
liquid	1
marina	1
marsh	1
meal	1
mudflat	1
nest	1
nose	1
perching bird	1
petal	1
piste	1
place of worship	1
plant stem	1
puppy	1
railway	1
shed	1
silhouette	1
ski touring	1
sparrow	1
spruce	1
stage	1
street light	1
sun	1
tower	1
track	1
trail	1
train	1
visual arts	1

electronic	1
footwear	1
fountain	1
french fries	1
galaxy	1
glass	1
guitar	1
hamburger	1
handwriting	1
home appliance	1
insect	1
invertebrate	1
knitting	1
labrador retriever	1
limb	1
liqueur	1
living room	1
marina	1
midnight	1
moonlight	1
musical instrument	1
mustang horse	1
navel	1
nipple	1
outerwear	1
parachute	1
plucked string	1
red sky at morning	1
residential area	1
ruins	1
sandwich	1
shoe	1
siding	1
slide guitar	1
spider	1
stallion	1
statue	1
steppe	1
suite	1
swimming pool	1
tent	1
terrier	1
textile	1
tower	1
toy	1
visual arts	1
white-tailed deer	1
wildflower	1
wildlife biologist	1
window	1
windsports	1
wool	1
yorkshire terrier	1