

Review

Emplacing Ecological Grief in Last Chance Tourism: Cryospheric Change and Travel in the Arctic

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Abstract: Last Chance Tourism (LCT) is an increasingly popular phenomenon whereby tourists seek encounters with vanishing landscapes, cultures, and endangered species. However, there are concerns that it is not sufficiently ecologically informed, has a large carbon footprint, and may put further pressure on vulnerable ecosystems and communities. This review specifically focuses on the Arctic, which is a major global frontier for LCT and is at the forefront of disruptive and accelerating climate change. It draws on theoretical insights from the Ecological Grief concept to chart a new research focus as well as a pathway to share empathy, concern, and sorrow between scientists, communities, and visitors. Key literature sources on LCT and Ecological Grief were selected from major international scientific journals and monographs. The major findings of the study are (i) the Arctic cryosphere is a life-sustaining entity and disruptive changes in its mechanisms currently threaten the unique ecologies and culture of the region and (ii) LCT must be attentive to the emotive accounts of loss and grief associated with cryospheric change and emplace both human and non-human voices in the narrative. These findings are relevant for LCT researchers, tourism planners, and conscious travelers in the Arctic who prioritize destination sustainability.

Keywords: Last Chance Tourism; Ecological Grief; loss and mourning; arctic cryosphere; disruptive climate change



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1. Introduction: Last Chance Tourism and Ecological Grief

This review synthesizes key scientific works on Last Chance Tourism (hereafter LCT) and Ecological Grief and argues for an emplacement of grief and mourning in LCT and sustainable tourism research. Its main aim is to show how LCT and Ecological Grief are connected, especially in the Arctic. This is timely and pertinent because the Arctic is at the forefront of both rapid climate change and LCT, and because not much work has been carried out to date on the nexus of LCT and Ecological Grief. The article is based on a selective review of key scientific literature on LCT and Ecological Grief, and it (i) reviews both concepts and their definitions, as well as the contradictions inherent in LCT, and (ii) provides a synthetic representation of the necessity of Ecological Grief-related narratives in LCT in the Arctic based on the ongoing decline of the cryosphere, pressure on the area's unique ecosystems due to disruptive climate change, and loss of traditional Inuit lifeways. It also identifies new research pathways and provides some suggestions for situating ecological grief in tourism praxis.

Last Chance Tourism is defined as a niche form of tourism where “tourists explicitly seek vanishing landscapes or seascapes, and/or disappearing natural and/or social heritage” [1]. LCT destinations span the globe and range from the tropical Great Barrier Reef and African rainforests to the icy worlds of Antarctica and the Arctic [2–5]. The Arctic is a major frontier for LCT, with the term initially gaining significance as a form of tourism that was borne out of the interest of cold places [6,7]; therefore, climate change effects played a major part in defining LCT destinations from the outset [7]. However, while LCT as it is currently practiced has an apparent connection with environmental change, it is not necessarily strongly coupled with the concerns for sustainability or sustainable tourism [7]

and in fact, self-fulfillment and personal satisfaction remain primary motivational factors behind many forms of LCT [8]—aspects that will be discussed in more detailed below.

Ecological Grief is a concept that has steadily gained traction in environmental studies literature for over a decade now [9]. Ecological Grief is defined as “the grief felt in relation to experienced or anticipated ecological losses, including the loss of species, ecosystems and meaningful landscapes due to acute or chronic environmental change” [9,10]. The ongoing pervasive human modification of the biosphere and intensifying environmental crises are pivotal behind this concept [9,11], as it calls for mourning and explicit forms of expression of sorrow toward empowering forms of ecological care and planetary wellbeing [11,12], also speaking for environmental justice in the process [13]. Dying rainforests, the vanishing cryosphere, oceanic acidification, and species extinction are all foci of ecological grief research [11]—and notably, the changes in the Arctic have played a vital part in the development of this concept [14].

The Arctic is a place that in many ways embodies the intensifying anthropogenic modification of the biosphere and the consequent repercussions on local lifeways and culture, and it has emerged at the forefront of both scientific and social research for some time now [15–19]. Regarding the effects of climate change, it is widely reported that the Arctic is warming much faster than the global average, via a phenomenon known as the Arctic Amplification. Rantanen et al. (2022), by analyzing multiple datasets over the Arctic since 1979, reported that the Arctic is likely to be warming as much as four times the global average [20]. The effects of this change are manifest over land and sea ice [21–23]. Enhanced precipitation, increase in sea surface temperature and storminess, change in the cryosphere, intensified hydrological cycles, and coastal erosion are reported from across the Arctic [24]. These ecological changes put the Arctic at the forefront of disruptive climate change, and they have ramifications both in the societies and cultures of the Arctic, as well as for the planet as a whole, justifying the selection of the area both as an LCT frontier and landscape of ecological anxiety/grief.

Tourism is deeply entwined with the ideals of development in the Arctic [25], and the global tourism industry is increasingly a key player in the region [26–28]—this has led to calls for deeper, reflexive, and more collaborative forms of research in tourism that strives to understand the inherent plurality of the Arctic [29,30]. These key works are also indicative of a developing tension between the intensifying touristic consumption/development discourses of the Arctic and an ecological anxiety that justifies further scholarly engagement with the region. In addition, while a substantive engagement with the concept and debates of sustainable tourism falls outside the scope of this paper, it could be pointed out that LCT and ongoing environmental change issues are related to the challenges in sustainable tourism, particularly those related to the vulnerability of the natural environment and communities from resource exploitation and climate change. As is widely known in sustainable tourism literature, tourism has an impact on land, water, air, and biota [31]. At the industry level, tourism is strongly focused on aspects of economic gain, posing deep challenges for environmental sustainability [31], and despite several declarations and expressions of commitment to environmental action, there is little evidence that the overall focus on growth and the consequent problem of carbon emissions has diminished over time [32]. However, at the same time, mitigating climate change impacts has emerged as a key focus of sustainable tourism research [33], along with the focal areas of destination vulnerability, social justice, and environmental integrity [34]. All of these aspects can be fruitfully related to LCT and ecological grief for a fuller engagement with sustainable tourism at vulnerable destinations.

The following sections provide an outline of the methods behind the review; key works on LCT and cryospheric change; an overview of the literature on Ecological Grief and its connection with LCT; characteristics of disruptive change in the Arctic; a ‘synthesis’ connecting the LCT and Ecological Grief concepts and identifying future research pathways; and a brief conclusion.

2. A Note on Materials and Methods

A three-stage review process that combined insights from (i) a selective literature review based on the *scoping review* method [35,36] and (ii) the *rhizomatic review* method [33] was conducted. Scoping studies (and reviews) are considered particularly suitable for broad topics with multiple threads and combinations of theoretical insights as well as real-world phenomena [35,36], and they are also a pertinent approach for suggesting connections and future research pathways. Rhizomatic review is open-ended and oriented to the analysis of sources across multiple disciplines. It is also inherently multilateral/multidisciplinary as it seeks to explore connections and associations between concepts and phenomena [37,38]. The rhizomatic method is also particularly suited to represent the voices of the ‘de-privileged’ [37]. As emotive accounts of ecological grief and loss are not yet mainstream in tourism research, the rhizomatic approach holds particular promise for highlighting those overlooked aspects. For this article, the theoretical concept of Ecological Grief was connected with the ongoing LCT phenomena in the Arctic.

The review was conducted over multiple *stages* (three for this study). However, as the rhizomatic review is an organic process of constantly exploring new possibilities and connections rather than a strictly managed review based on pre-selected (and foreclosed) criteria [37], the stages often overlapped and involved multiple iterations. The main aim of a rhizomatic review is not to make it replicable but to chart out the knowledge frontier and open up new possibilities in an organic, overall sense. Accordingly, new materials were identified through keywords that *emerged* during the review process, and the whole process involved simultaneously broadening the review focus to include terms, concepts, and phenomena to gain a better understanding; as well as narrowing the scope to highlight particular areas [37], species (the Greenland Shark is an example), and/or communities. The review process was closed only due to the constraint that it was being carried out for a specific purpose (i.e., writing a paper) and was thus artificial. Thus, the eventually selected 87 sources (excluding the four items for explaining the review method) constitute the result of an open-ended and multi-phase iterative process of in-depth study of scientific literature. In consistence with the rhizomatic review requirements, the closure was left open-ended, and future research directions were provided (for more on the rhizomatic review process, see [37]).

During the first stage, a broad search involving the terms ‘Last Chance Tourism (LCT)’, ‘Ecological Grief’ and ‘Arctic’ was conducted. Due to the author’s familiarity with the topic, the following journal databases were identified: (i) Taylor and Francis journals online; (ii) Sage journals online; (iii) Elsevier Science Direct; (iv) Nature (online); and Science (AAAS) (online). Databases (i) and (ii) were primarily used to search tourism-related content, database (iii) was used to identify both tourism-related and environment/ecology-related documents, and databases (iv) and (v) were mainly used to identify scientific studies on environmental change in the Arctic and the cryosphere. Additional materials from different databases/journals were identified from some sources and subsequently included for relevance. As for monographs, a selective choice was made to feature works of well-known scholars on ecological grief, environmental change in the Arctic (and the planetary cryosphere), LCT/tourism and the Arctic—with the overall aim of enriching the scope of the review.

During the second stage, results were narrowed down to identify major theoretical insights and influential sources across a length of time; and during the third stage, the analysis was further developed to explore connections and future possibilities. A few useful sources were added to explain certain concepts and illustrative purposes in the narrative during the second stage. Consistent with both scoping and rhizomatic review methods, sources eventually selected for the analysis are spread across a length of time (i.e., their publication dates reflect a temporal breadth). This diachronic selection is essential for avoiding temporal bias and for the inherent importance of the older sources in the Ecological Grief and LCT literature. In addition, an amount of diversity in the sources (i.e., not only journal articles but also important monographs, especially related to the theoretical concepts) was maintained during the three-stage process, which is also consistent

with both methods. Out of the total 95 sources finally selected, 74 were journal articles, 21 were books/book chapters and 2 were website entries (4 sources were featured to explain the research method, and sources [31–34] were added following reviewer suggestion).

It should also be noted that consistent with the rhizomatic approach, the review unfolds with multiple connections and possibilities spread over the entire narrative. Rather than neatly dividing the aims, evidence, and findings, it is presented in an organic manner justifying the term *synthesis*; therefore, it should be read in its entirety and as a whole.

Thus, rather than providing an exhaustive review of papers on these topics, this work aims to provide a conceptual underpinning for future research that can fruitfully combine the concepts of LCT and Ecological Grief, which can further serve as a pointer towards improving tourism praxis in LCT destinations. The case of the Arctic is highlighted both owing to the high ecological sensitivity of the region in the face of intensifying climate change, as well as for its position in both LCT and Ecological Grief-related literature.

3. Last Chance Tourism and Cryospheric Change in the Arctic

As already noted above, LCT is seen as a niche form of tourism where tourists seek to encounter endangered landscapes/landmarks or species. A full summary of LCT trends can be found in Lemelin and Whipp (2019) [39]. In one of the earlier works on LCT, Lemelin et al. (2010) described it as an offshoot or complementary development out of the more generic ‘dark tourism’—the key difference being that rather than revisiting memories of war or social disturbances, tourists in LCT seek to engage with the anthropogenic transformation of ‘formerly remote areas’ [1]. The interest in a vulnerable yet visually beautiful cryosphere has long framed tourism activities in polar regions [40]. Major attractions of polar tourism include landscapes, endangered polar megafauna, and indigenous cultures—and some signature sites mentioned by Lemelin et al. (2010) are the Illulissat Icefjord of Greenland, the Kluane/Wrangell-St. Elias/Glacier Bay/Tatshenshini-Alsek World Natural Heritage Site of Canada and the US, and the popular polar-bear viewing destination of Churchill in Manitoba, Canada [1]. Concerns about change in polar environments feature in several papers on LCT [3,41–43]. While describing LCT in Kaktovik, Alaska (another popular destination for polar bear-viewing tourists), Miller et al. (2020) observed that “... a worthy goal of LCT would be to increase the awareness and conservation actions of visitors to these locations, perhaps mitigating impacts contributing to their demise” [44]. They further argue that the deeper and more extensive the immersion of the tourist into the environment, the higher the probability that some type of pro-environmental behavior or awareness would be observed among visitors. Additionally, Powell et al. (2011) suggested that visitor impressions of the Antarctic included five ‘awe’ elements that included spiritual connection, transformative experience, and a sense of feeling humbled [45]. Such studies suggest that it is plausible that LCT as an activity could lead to heightened environmental awareness and potentially to ambassadorship for conservation.

Yet, as numerous studies also clearly highlight, currently LCT activities (including those in the Arctic) fall short of fulfilling a substantial role in addressing/mitigating ecological concerns. Eijgelaar et al.’s (2010) study found no evidence that Antarctic cruises resulted in any meaningful awareness of the GHG emission problem [42], and Vila et al. (2016) observed that while trips to Antarctica modified the thinking of visitors, the reported change in perspectives does not necessarily favor ecological concern; therefore, the perceived ‘ambassadorship’ role of LCT tourists in Antarctica could not be established from visitor responses [46]. Groulx et al.’s (2019) study on the two cases of LCT Churchill (polar bear viewing) and the Jasper National Park (glacier tourism) in Canada also supported this paradox of tourists attaching a high ‘value’ to endangered landscapes/biota yet refusing to become self-critical regarding GHG emissions from their own travel [47]. Regarding tourism in the Arctic, the general backdrop of a rapid, several-fold increase in visitor numbers over the last decade or so [48] must also be kept in mind, as this creates a real and tangible footprint on the Arctic environment that cannot merely be wished away with good thoughts.

As this discussion shows, there are two major paradoxes of LCT in polar environments: (i) the personal motivations of the visitors may not necessarily align with ecological concerns and (ii) the very act of engaging in LCT can further pressurize/transform these vulnerable environments. Regarding visitor motivations, studies report self-fulfillment, longing to see iconic places and animals (or plants) before they disappear, and experiencing exotic cultures of remote places [3,7,8]. Dawson et al. (2011) provided two important observations in this regard: firstly that “LCT is more about: (1) the perception of vulnerability among the general public and (2) that which is perceived to be vulnerable (i.e., landscapes, seascapes, flora, fauna, built environments, or cultures), than it is about the exact attributes of a particular destination” and that LCT research should move on from judging whether LCT is intrinsically good or bad to examining which aspects of LCT are good or bad in what type of contexts [3]. An important caveat that follows from the first observation is that much of the LCT in practice is currently influenced by media and popular ‘imagery’ of the place rather than in-depth academic knowledge, which is connected to the risk that LCT activities are prone to engaging with the destinations in a superficial manner.

Numerous works highlight the fundamental conundrum of any LCT involving travel to remote locations which in turn means that the carbon footprint of such travel sits at odds with any noble aims that the tourists or the tour operators might have [8,27,42,49]. The key lesson here is that because anthropogenic climate change is the key driver of disruptive change in most LCT destinations—and certainly the case for the Arctic—any rhetorical solution is ultimately devoid of meaning as the very act of traveling to those locations adds up further CO₂ in the atmosphere and accelerate the demise of the places the tourists are willing to visit. This situation also lays bare the deeply consumptive nature of LCT—i.e., that those engaging in LCT are nevertheless willing to travel to remote places when there is overwhelming evidence of the disproportionate carbon footprint of long-distance travel within the tourism sector, which in turn translates to a major share in tourism’s contribution to climate change [50,51].

There is a third angle regarding that deserves particular attention, especially in the case of the Arctic. This is the ‘ethical’ issue of visiting endangered species and rapidly changing places/communities for self-fulfillment, thereby subjecting them to an act of ‘ocular consumption’. Dawson et al. (2011) touch upon this aspect by observing that what we ‘should do’ is an ethical question that requires case-by-case analysis [7]. Several researchers have reported critically on endangered polar wildlife such as the polar bear being subjected to intense ocular consumption—without any meaningful commitment on the part of the tourists to conserve the species or its habitat [52–54]. What is less often reported is a possible bias, even among researchers, to *accept* the ongoing change and thus *normalizing* it in tourism research-related discourses. Woosnam et al. (2021) report that LCT research literature tends to fall under either of the two camps of visitors and local tourism stakeholders [55]. While there is some focus on host communities in LCT [56], there is also the tendency to relate the ongoing change to the concept of ‘resilience’ perhaps all too easily [27], which translates to an inadequate understanding of the vulnerabilities and potential loss of connectivity between Arctic (especially Indigenous) communities and a rapidly changing cryosphere. For example, the study by Minor et al. (2023) that social exposure to climate change varies even within the Arctic—with Greenlanders being twice more likely to experience rapid change in the cryosphere and local ecosystems compared to other Arctic countries, and the possibility that the pace and trajectories of change may outstrip local reserves of social capital/preparedness [19]. Grimwood (2014) made a similar observation regarding Indigenous communities in the Canadian Arctic by noting that LCT narratives typically conceal the narratives of the indigenous communities [41]. LCT destinations are also lived places, and environmental change is felt in a fundamentally different manner by these communities and also implies fundamental changes to their lifeworld.

4. Ecological Grief and Its Relevance for LCT in the Arctic

Ecological Grief is seen as a direct response to global environmental change and research on this concept was also termed as a response to climate change [10]. It is also, therefore, a call for action on ecological destruction—through sharing effect, sympathies, support, and sorrow [13]. An excellent and exhaustive review of the scientific literature on Ecological Grief can be found in Pikhala (2024) [57]. Although Kevorkian (2024) makes a distinction between *environmental grief* and *ecological grief* where environmental grief is seen as grief stemming from the loss of ecosystems and ecological grief is a form of sorrow arising out of our disconnection from the natural world [58], it is clear that the two terms share a large amount of overlap. Ecological grief research has gained momentum over the last decade [10] and the most important thread connecting various case studies is the sense of loss shared by communities as well as scientists/researchers. A key paper by Cunsolo and Ellis (2018) [9] sums up the conceptual foundations and the current research frontier on Ecological Grief. In this paper, the authors make several important observations such as ecological grief is generally disenfranchised or mostly left unconsidered in climate change narratives and policy research; that the loss of local ecological knowledge can be a trigger for ecological grief; and that Arctic (Inuit) communities typically encounter a disproportionate share of ecological grief which reflects the sudden shift and erosion of traditional lifeways/knowledge gained over multiple generations. One of the earliest expressions of ecological grief in the English literature can be found in Aldo Leopold's reflections, and perhaps more importantly in the seminal work *'Slow Violence and the Environmentalism of the Poor'* by Rob Nixon (2011) in which he analyzes the disproportionate effect of environmental change on the poor and those people who share a close connection with the land [59]. In this work, Nixon also explicitly mentioned the 'thawing cryosphere' as a key element of such change [59]. Among other key works is the essay by Phyllis Windle (1992) who elaborated on the emotional attachments scientists (ecologists) have with ecosystems and species [60]. It should also be noted that the role of grief and mourning as a powerful tool for protesting the degradation of complex ecological systems and, therefore, a means to fulfill our ethical responsibility towards non-humans is also present in the works of feminist scholars such as Butler (2006)—whose thoughts influenced this concept [9,61].

As already mentioned, cryospheric change and community perceptions in the Arctic played an essential part in the development of the ecological grief concept from the outset. Early studies covered situations in Nunatsiavut, Canada as well as the circumpolar region in general [62]. In the opening of the volume *'Mourning Nature: Hope at the Heart of Ecological Loss and Grief'*, Cunsolo (2018) describes how stories from the Inuit people in Nunatsiavut were instrumental behind the formation of the concept. Recounting the sorrow of a particular Inuit woman, she writes how the tears of that woman moved and transformed her own thoughts [63]. In a subsequent chapter, Cunsolo (2018) sums up this process as 'to mourn beyond the human'—revealing the central importance of non-humans/more-than-humans in the narratives of ecological grief [64]. Thus, while the expression of grief is a cultural process and ecological knowledge, mindfulness, and emotions of the local communities (as well as researchers) are key elements, the deep connections between the local inhabitants and terrestrial/marine ecosystems surrounding them elicit this cultural process, which in turn means that the process transcends immediate human concerns and extends to the many species and ecosystems that together make the Inuit lifeworld. Accordingly, Cunsolo and Ellis (2018) observed that there are three types of ecological grief: (i) grief associated with physical ecological losses, (ii) grief associated with the loss of environmental knowledge, and (iii) grief associated with anticipated future losses. Firstly, grief associated with tangible ecological losses may include the degradation or actual disappearance of certain species/ecosystems/landscapes—relevant examples included Inuit grief in the face of changes witnessed in the landscape that inhibited the ability to travel on ice to procure food. Regarding grief associated with environmental knowledge, disruptive and sudden climate change-related effects were observed to lead to sadness and distress among the Inuit as traditional knowledge about ice, seasonal patterns,

and animal behavior could no longer be considered reliable. Finally, grief pertaining to future ecological losses includes anxiety and uncertainty over what the future holds—exhibited by Sami reindeer herders who are apprehensive of future climate change effects on their resources and lifestyle [9].

From this discussion, it is clear that while there has been no formal effort yet to combine them, both LCT and ecological grief have several aspects in common. These include (i) the actual physical setting (ii) the experiences encountered and (iii) what the future holds. The actual physical setting of LCT (in this case the focus is on the Arctic, but it could be elsewhere such as Antarctica, rainforests, coral reefs, and still the same will apply) is also a landscape/seascape (or multiple landscapes/seascapes) of disruptive change and loss. However, the major difference between the two is that while in the LCT visitors are primarily motivated by self-fulfillment and the global tourism industry packages those landscapes/seascapes for consumption of (mostly affluent) tourists who are not primarily affected by the changes, ecological grief is felt acutely by the communities who share a primary connection with the changing landscapes and seascapes and, therefore, experience the disruptive change firsthand. Regarding the future, it is perhaps obvious that both LCT and ecological grief will be further affected/amplified as changes in the cryosphere accelerate and accumulate—resulting in a possible depletion of LCT resources and cascading changes to the lifeworld of Indigenous communities and their knowledge systems. This strand of discussion will be revisited in the synthesis section below, but before that, it is necessary to briefly revisit some of the key changes in the Arctic environments.

5. Ongoing and Accelerating Changes in the Arctic Environments

This section adds a brief note explaining some important trajectories of environmental change currently occurring in the Arctic. A comprehensive review of the changes is beyond the scope of this section (and the paper) and as such, it should be read as an interlude to further relate the LCT and ecological grief concepts with the immediate realities of environmental change in the Arctic.

As previously noted, the Arctic region is at the forefront of disruptive climate change, with the Arctic Amplification effect playing a major part in rapid warming [20]. There is some uncertainty on the rate of this warming—with studies variously reporting the amplification effect as twice, thrice, or even four times the global average [20,65,66]—but the overall rapid warming pattern is clear. As several of these studies reveal, much of the change on the land relates to the condition of the Greenland Ice Sheet. While some scientists have reported a progressive change in ice rheology over the entire Holocene that resulted in thicker ice at the center of the sheet [67], others have noted the progressive thinning of the sheet over the Holocene [68]; with recent warming effects along the periphery being widespread and disruptive to the stability of the entire sheet [69,70] (for Figure 1). Notably, Vinther et al.'s (2009) work identified the likelihood that far from being passive and stable as commonly understood, the Greenland Ice Sheet has had a history of vigorously interacting with climate fluctuations during the Holocene [68]. This is an important realization as it presents the likelihood of the ice sheet behaving stochastically and in an increasingly fluctuating manner as climate change effects intensify. Regarding sea ice, it was reported that the Arctic sea ice showed negative trends throughout the year over the last three decades—with an abrupt regime-changing (negative) shift in ice thickness occurring in 2007 in the Fram Strait sea ice that constitutes the lion's share of the outflowing sea ice from the Arctic to the Sub-Arctic [71]. The authors of this study also reported shorter residence time and reduced thickness of sea ice in general, which translates to the loss of multi-year ice.

The effect of sea ice reduction on the Arctic marine ecosystem cannot be emphasized enough, sea ice is crucial for marine species survival in the area and plays a definitive role in biogeochemical mechanisms [72]. Regional distributions of plankton, fish populations, and benthic biodiversity are all dependent on sea ice [72–74]. Figure 2 provides an illustration of some of the notable marine species affected. Spatiotemporal heterogeneity plays an

important role in the terrestrial biodiversity of the Arctic [75]. In recent years, the expansion of northern temperate boreal species, expansion of parasites and non-indigenous species, and changes in the food web and predator–prey dynamics which lead to transformational change in the trophic cascades, have been reported [76–79]. Grémillet and Descamps (2023), in their analysis of the Arctic marine megafauna, cautioned that while changes in the Arctic Ocean ecosystems are observable, there are many uncertainties due to our incomplete understanding of the key species in those ecosystems and called for combining citizen-science-based inquiries to understand ecosystem dynamics in the area better [79]. One example of poorly understood megafauna is the Greenland Shark, which is still not adequately described in science but remains vulnerable due to overharvesting in the past and the proliferation of shipping and commercial fishing in its habitat [80,81]. In addition, as a study on musk oxen and caribou helped to illuminate, many Arctic land species have evolved in synchrony with the climate. They are easily affected by climate and landscape change dynamics [82–85]. Species such as the caribou have deep cultural significance for indigenous herders, whose voices were often unheard during phases of developing the Arctic through extractive and modern industries [86,87]. There is currently a major ‘rush’ to develop tourism in the Arctic which is seen as the ‘last frontier’ [88], and this will put further pressure on these ecosystems.

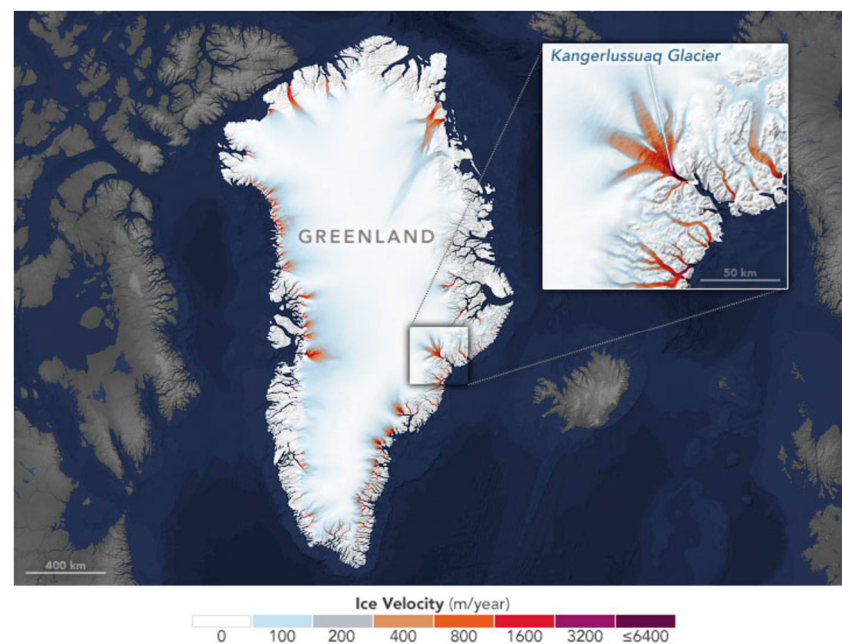


Figure 1. Decline of the Greenland Ice Sheet as revealed by the glacier outflow data spanning 1985–2015. Increased velocity implies progressive mass loss. The Kangerlussuaq Glacier is highlighted inset. Image courtesy NASA Earth Observatory, from: <https://earthobservatory.nasa.gov/images/147728/shrinking-margins-of-greenland>. (accessed on 20 March 2024).

Regarding the task of tourism researchers to account for the vulnerability of natural systems, a section of scholars has pertinently observed that despite its best efforts, tourism cannot decouple itself from its earthy entanglements [89] in the Anthropocene when the human species has emerged as a major geological force that influences the trajectories of the Earth System [90]. Recently, important markers in this regard have been laid down by Ren et al. 2023, Rantala et al. (2024), and Ren et al. (2024) in tourism research [30,87,88]. In their paper Ren et al. (2023) called for ‘critical proximity’ in tourism research that upholds the need for discovering multiple attachments and entanglements between the researcher and the ‘field’—an approach that consciously refrains from making grand claims about phenomena and instead values fine-grained details and pluralities within them [91]. Rantala et al. (2024) call for ‘proximity’ in tourism research, emphasizing the need to ascribe

agency to both humans and non-humans [92]. As noted earlier, Ren et al. (2024) explore the specific case of Greenland and posit the term ‘connectivity’ as a further key to exploring the multiple relationalities/associations among humans and non-humans in the Arctic [30]. Elsewhere, some papers call for ‘emplacing’ non-human voices in tourism research and recognizing a new ‘value’ for nature that is based on its vulnerability [93,94].



Figure 2. Some notable examples of Arctic marine megafauna. Top (left to right): Arctic Tern, Atlantic Cod, Walrus. Center (left to right): Boreo-Atlantic Armhook Squid, Common Eider, White-beaked dolphin. Bottom (left to right): Bearded seal, Polar cod, Polar bear. Reprinted from *Trends Ecol. Evol.* Grémillet, D.; Descamps, S. Ecological impacts of climate change on Arctic marine megafauna. 38(8) 773–783. 2023 [79], with permission from Elsevier.

6. Synthesis: Combining Ecological Grief and LCT to Better Inform Travel in the Arctic

6.1. Major Insights from the Review

In this section, major insights from the review process will be summed up and some suggestions for combining LCT and Ecological Grief in the Arctic context will be provided. While the rhizomatic review method is not meant to produce a tightly structured narrative with specific, reductive conclusions, two broad threads can be identified by *synthesizing* the sources: (i) the Arctic cryosphere is a life-sustaining entity and disruptive changes in its mechanisms threaten the unique ecologies and culture of the region and (ii) LCT must be attentive to the emotive accounts of loss and grief associated with cryospheric change and emplace both human and non-human voices in the narrative. A simple graphical representation of the multiple connections between environmental and social change in the Arctic, their integral relationship with ecological grief and anxiety, and the connectivities with LCT is presented in Figure 3. Consistent with the rhizomatic review process, this should only be used as an illustrative example, and not as any definitive guideline as different conceptualizations are also possible.

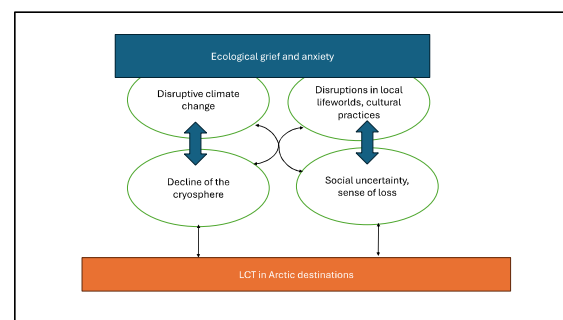


Figure 3. A simple graphical illustration of how environmental and social disruptions in the Arctic are inherently linked with ecological grief and anxiety and how their combined relationship needs to be emplaced in LCT research/narratives/praxis.

Reflecting on the preceding discussion, it can be observed that while there is considerable interest and awareness of the Arctic environments and the effects of disruptive climate change among tourists, the current praxis of LCT is generally not based on ecological sensitivities. The lack of ecological insights applies to an extent to LCT research as well, necessitating efforts to bridge the gap between the lucrative business of satisfying wealthy tourists as the Arctic becomes increasingly approachable for short-term visits, and the changing lifeworld of communities who experience the effects of the diminishing cryosphere and associated changes firsthand and over the longer term. It can also be emphasized that human inhabitants alone are not the full story, non-human species and elements (such as snow, ice, water, and rocks) are all essential parts of the Arctic community. Therefore, a traditional community-based approach is also likely to fall short in fully appreciating the contours of changes in the Arctic and a broader, fuller ecological concern that requires affect, empathy, and sensitivity toward the conditions of the wider human–non-human–more-than-human communities is required.

6.2. Possible Future Research Pathways

Here, it is useful to provide some broad contours of how tourism researchers and LCT stakeholders might approach LCT and ecological grief and loss. Due to the heightened interest in the Arctic in a time of rapid change, there will always be the global tourism industry that seeks to exploit the resources of the Arctic; therefore, mass-based and larger-scale versions of LCT are probably inevitable. Similarly, it is unrealistic to hope that LCT in the Arctic will achieve the ideals of ‘sustainable tourism’—notwithstanding the dichotomies inherent in that term itself. It will be equally impossible to completely replace the current dominant narratives based on resource consumption in LCT. However, by explicitly addressing loss and sorrow, it is possible to produce a powerful counter-narrative, one that can be useful to reclaim *travel* in the age of tourism dominated by market forces. This counter-narrative can also chart a pathway where travelers consciously seek self-transformative experiences, along the lines of Stavans and Ellison (2015) [95]. LCT researchers may renew their focus on aspects such as: (i) What ecological issues are there in the Arctic? (ii) How can tourism contribute to ecologically informed outcomes? (iii) What level of willingness and awareness do visitors and stakeholders have towards that end? and (iv) How can travel in those destinations be self-reflexive and transformational? These strands of inquiries could be combined with Ecological Grief-related research on issues like (i) How is the loss/vulnerability of specific species/landforms/biophysical elements reflected in the sense of vulnerability or anxiety at the local society level? (ii) What cultural/social/recreational aspects are likely to be affected due to the transformation in Arctic ecosystems and the Arctic Cryosphere? and (iii) Do long-term residents and short-term visitors perceive ecological grief differently, if so in what ways?

Although not explicitly related to tourism, Varutti (2024) has given some further important clues in this regard. She argues for the need for publicly grieving and mourning—which would unshackle mutual ecological sensitivities and empathies and help people to connect with one another through those acts. Furthermore, Varutti mentions some useful approaches such as (i) developing ecological skills, (ii) intimacy, (iii) mental flexibility, and (iv) creativity [13]. Developing ecological skills implies the cultivation of communicative skills that are based on ecological awareness and are aimed at ecological action. This facet could be vital as a resource for LCT guiding and interpretation. Intimacy helps us with the potential of sharing empathy and concern with others, and it may be observed, including non-human others. Mental flexibility and creativity could further enhance the two former facets, as the magnitude and rate of unfolding change in the Arctic cryosphere always require us to be prepared for the unexpected. These hints could be fruitfully utilized by tourism planners and practitioners in the Arctic by (i) actively creating platforms and opportunities for sharing anxiety and grief between local communities, guides, and visitors; (ii) encouraging local individuals as well as communities to share stories of loss and grief; (iii) formally featuring tales of ecological loss and grief in guidebooks or guidance materials—especially

those relating to protected areas in the Arctic; and (iv) develop LCT in the Arctic as an interpretive process of engaging with and caring for the Arctic cryosphere. While this article is primarily concerned with opening up new research leads, tourism practitioners and planners would surely play vital roles in putting research insights into praxis.

Considering these views, and based on the discussion in the earlier sections, this article argues for the need to account for ‘ecological grief’ in LCT in the Arctic. The connection between ecological grief and the unfolding change in tourism destinations is so far inadequately addressed in tourism literature. The contention here is that, while it is necessary to celebrate the multiple relationalities and the entanglements of humans and non-humans—in the Anthropocene there is an equally important duty to *mourn* the loss/diminution of many connections and particularly non-human counterparts/elements of the natural world that leave indelible imprints on the human lifeworld. That such accounts of loss and grief are rarely featured in the dominant narrative is precisely the reason to focus on them, because without understanding/appreciating the sense of loss, we cannot realistically achieve a fuller understanding of the changes currently unfolding in the Arctic. As pointed out in the previous sections, the Arctic cryosphere—manifested through the mechanisms of the Greenland Ice Sheet or Arctic sea ice—is a dynamic, vibrant entity, or rather a multitude of entities, that has the capability of interacting vigorously with the climate, geomorphological features, ecosystems, and societies. In addition, the cryosphere of the Arctic is a key player in the evolution of species and their habitats, which in turn underpins the lifeways of the indigenous people. It is also a source of both traditional and scientific knowledge. The Arctic cryosphere in this sense is a major sustaining force behind human creativity, culture, and science—and disruptive change in the wellbeing of this system has the potential to unhinge many ecological and cultural functions the effect of which would surely reverberate beyond the Arctic itself. While the possible research pathways suggested above are only some broad contours helpful in connecting ecological concern/anxiety to tourism in the Arctic, they collectively emphasize the message that future research needs to reconfigure the Arctic as a complex, dynamic, and organic system with multiple human–non-human connectivities. Portraying the Arctic cryosphere as a mere backdrop for ongoing change, or a relic of the past that would inevitably change in the Anthropocene is, therefore, both short-sighted in a scientific sense and short of empathy from a cultural/emotional standpoint. Taking the emotive accounts of grief and loss associated with the changes in the cryosphere, and emplacing both human and non-human voices in those multiple narratives of loss and disenfranchisement allows us to ultimately look forward with hope, a hope of understanding the Arctic—both as a lived space and a tourism frontier—in a fuller manner.

6.3. Limitations of the Study

This review specifically focused on LCT and Ecological Grief, but there are forms of tourism in the Arctic other than LCT that also share connections with natural phenomena. While they were not included in this study, future research on tourism and environmental change in the Arctic could benefit by exploring them. Moreover, this study did not delve deep into the Inuit lifeworld, which remains a key feature of the Arctic society.

7. Conclusions

This review, following scoping and rhizomatic approaches, explored multiple connections between LCT and Ecological Grief through a synthesis of key literature. While LCT has emerged as a new research frontier as well as an increasingly popular form of tourism, it has so far remained mainly preoccupied with tourist and stakeholder priorities and there are no reliable indications that current forms of LCT lead to ecological outcomes. This situation necessitates a counter-narrative that can forcefully address the vulnerabilities of both human and non-human communities. The Arctic provides a particularly instructive case in this regard, as it is a region that finds itself at the forefront of rapid and disruptive climate change. The concept of Ecological Grief can help us engage with the vanishing

cryosphere—and the landscapes, species, and communities that have co-evolved with it—from an alternative angle of sharing sorrow, empathy, and concern. It also helps us to realize that the cryosphere of the Arctic is not a mere backdrop for change, but a vigorous and inherently pluralistic entity that fosters equally dynamic and multitudinous webs of life. While it may not entirely replace the dominant narratives of LCT whereby the Arctic is the last exotic frontier of tourism, such realization may enable tourism researchers to critically engage with and reclaim travel at multiple levels and enhance destination vulnerability angles in sustainable tourism research.

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