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Original Research Article

From Dark Tourism to Ecological Grief in Last-Chance Tourism

(Re-reading the Regenerative Capacities of the Bloodstained River (Sojas-River))

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Abstract | Today, environmental degradation has transcended physical crisis to become a profound psychological and existential challenge. Focusing on the Sojas-River (Qanlıçay) as a "landscape of suffering," this study investigates how ecological grief—stemming from riverine decay—can be transitioned from a stagnant state to a dynamic one. The primary objective is to evaluate the mediating role of "authentic storytelling" within "last-chance tourism" frameworks in enhancing ethical responsibility and fostering regional social regeneration. Employing an exploratory sequential mixed-methods approach, the study began with 18 semi-structured interviews with local stakeholders and experts, utilizing thematic analysis to identify dimensions of grief—specifically "physical grief," "identity grief (solastalgia)," and "anticipatory grief"—which informed the development of a quasi-experimental intervention. This intervention was tested on 60 visitors (30 experimental, 30 control) and analyzed via independent t-tests and Cohen's d in SPSS-26. Findings reveal that exposure to witness-based, authentic narratives significantly increased participants' willingness to engage in regeneration by 68% ($p < 0.001$). Large effect sizes ($d > 0.8$) confirm that storytelling effectively converts suffering into awareness, transforming stagnant grief into "dynamic grief." Consequently, the study posits that the Sojas-River serves not merely as a threshold landscape of decline, but as a "media-place" for ecological awakening. Ultimately, landscape regeneration necessitates shifting beyond engineering interventions toward the management of meaning and "supportive tourism," effectively transmuting environmental loss into a vital artery of collective consciousness and ethical stewardship.

Keywords| *Ecological Grief, Dark Tourism, Last Chance Tourism (LCT), Authentic Storytelling, Landscape Regeneration.*

Introduction| In recent decades, escalating pressures arising from climate change, the severe depletion of water resources, and persistent shortcomings in the integrated management of river basins have not only undermined ecological functioning but have also precipitated the gradual erosion of the profound cultural bonds historically linking human communities to rivers. This erosive trajectory, particularly within rural settlements, has reduced ecological resilience and accelerated the decline of water-related Intangible Cultural Heritage (ICH) (Golmohammadi & Ehsani, 2026). From the perspective of cultural studies, tourism, as a broad social response to life and to the desire to encounter other cultures, remains directly connected to fundamental human concerns (Gholampour et al., 2021). Nevertheless, progressive environmental degradation has now moved beyond the level of a physical and "real" crisis in nature and has become a distinctly psychological-existential one; accordingly, cultural practices and lived experiences such as tourism have become, often inadvertently, entangled with a spectrum of suffering, apprehension, and Ecological Grief.

Within the relevant scientific literature, although no complete consensus has yet emerged regarding the precise nomenclature of concepts such as eco-anxiety and climate anxiety, or the most appropriate ways of framing them, the principal orientation of current research increasingly emphasises the question of human resilience in the face of environmental degradation (Cunsolo et al., 2020). Once such anxieties enter the lifeworlds of those who turn to spiritual and pastoral forms of support

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and care, a number of foundational questions arise: should this experience be understood solely as a "mental health issue", or does it constitute a broader phenomenon that also encompasses activist dispositions and moral emotions? In this respect, the identification and recognition of the lived experience of those affected by eco-anxiety within the care discourse has become both a pressing necessity and a central scholarly concern (Ward, 2020; Ojala et al., 2021).

For an empirical formulation of this connection between ecological suffering and cultural heritage, the case of Sojas-River in Khodabandeh County, Zanjan Province, is particularly instructive. Historically, this river constituted the axis of life for the historic town of Sojas and the surrounding villages, including Khandab, Changur, and Zavinaq. Its local designation in Azerbaijani Turkish, Qanlıçay - Bloody River, derives from past natural events and destructive floods that, according to local narratives, led to the deaths of a number of people. This historical background has rendered Sojas-River an example of those places whose identity has been shaped through associations with death, catastrophe, and human suffering, and which may therefore be interpreted within the theoretical framework of Dark Tourism (Stone, 2006; Raine, 2013). At the same time, the river's gradual desiccation in recent years has added a new layer of meaning to the site, transforming it into a context through which the regenerative capacities of grief-based ecological thinking may be explored (Barnett, 2022; Varutti, 2024).

Within the paradigm of Sustainable Tourism, the concept of Last Chance Tourism (LCT) refers to destinations threatened by environmental degradation or the loss of natural and cultural heritage, towards which tourists are consciously drawn precisely because such landscapes are in the process of disappearing (Lemelin et al., 2010; Dawson et al., 2011a). In its present condition, Sojas-River constitutes a Vision of Suffering that not only reflects environmental crises but also contains the potential to evoke a form of ecological grief; that is, a grief rooted in the sense of loss and sorrow occasioned by environmental destruction (Cunsolo & Landman, 2017; Cunsolo & Ellis, 2018; Cunsolo et al., 2020). Engagement with these dark dimensions, moreover, extends beyond the mere visitation of a catastrophic site, since it enables dialogue with history, the preservation of memory work (Stone & Sharpley, 2008), and a deeper understanding of the consequences of historical error (Martini & Minca, 2021).

Despite the growing body of scholarship on ecological grief, as well as on dark tourism and LCT, these fields have largely developed along relatively separate trajectories, and many existing studies remain predominantly descriptive rather than theoretically elaborated (Asadipur, 2025). Although narrative interventions in psychological and social research have often been examined as instruments for reconstructing meaning after loss, their application to the management of ecologically degraded landscapes within the framework of LCT has received comparatively limited attention. As a result, the conceptual and analytical relationship between the experience of ecological grief and the mechanisms of tourism, particularly through interpretive devices such as storytelling, still requires more systematic examination. This research gap is even more pronounced in underexplored contexts such as Iran, where deteriorating landscapes carry, in addition to ecological crises, dense and interwoven layers of historical memory, place identity, and the lived experiences of local communities. The experience of sorrow, loss, and instability of meaning among the local inhabitants of Sojas-River further intensifies the need to investigate how LCT, with an emphasis on storytelling, may mediate between ecological suffering, Sense-making, ethical remembrance, and, ultimately, sustainable action.

Accordingly, by focusing on Sojas-River as a vision of suffering, the present study seeks to demonstrate how authentic storytelling grounded in witnessing can generate an interpretive mediation between the experience of ecological grief, Memory Work, and environmental agency and, in so doing, direct this process not towards the intensification of suffering or the commodification of grief, but rather towards Ethical care and community regeneration. More specifically, the study aims to clarify the mechanisms through which storytelling may transform the experience of environmental loss and natural decline into ethical awareness, responsibility, and environmental action, thereby addressing the existing gap between the literature on ecological grief and the scholarship on LCT through an interpretive and applied framework (Njoroge, 2014; Cunsolo & Landman, 2017; Pihkala, 2022).

Problem Statement

The fundamental problem addressed in this study is the transition of environmental degradation from a physical crisis to a psychological-existential one, alongside the gradual erosion of the cultural-semantic connections linking human communities to river systems (Golmohammadi & Ehsani, 2026). In the contemporary era, the degradation of ecosystems has extended beyond the disruption of ecosystem services, precipitating complex phenomena such as eco-anxiety and ecological grief. This situation raises novel questions regarding how the lived experiences of individuals can be identified and represented within the Care Discourse—questions that transcend mere mental health concerns to encompass the domains of ethics and social activism.

In this context, the Sojas-River, which has entered the collective memory as Qanlıçay - Bloody River due to historical floods and its association with human death and suffering, serves as a concrete manifestation of the intersection between historical trauma and contemporary ecological degradation. Within the frameworks of dark tourism and LCT, this site functions as a vision of suffering. The primary challenge here lies in the paradox of the commodification of destruction, a process wherein ecological and human suffering, rather than prompting

ethical responsibility, is reduced to a consumable product for tourists.

Despite the expansion of the international literature in this domain, prior research has remained largely restricted to describing the emotional experiences associated with environmental decline or examining tourist motivations at disappearing destinations (Asadipur, 2025). Consequently, a significant gap persists in elucidating the mechanisms capable of establishing a link between the experience of ecological grief and the development of environmental activism. Particularly in contexts such as Iran, where degrading natural landscapes are intricately interwoven with the historical memory and cultural identity of local communities, the lack of a conceptual and operational framework for managing these landscapes may lead to the dominance of stagnant grief- characterised by passivity, emotional numbing, and social withdrawal. Therefore, the central question of this research is how authentic storytelling and witnessing can mediate between the painful experience of loss in the Sojas-River basin and the generation of meaning and ethical responsibility. In doing so, this study examines how ecological grief can be transitioned from a static condition into a dynamic grief that serves as a driving force for environmental care and community regeneration.

Research Questions

Accordingly, the principal research question of this study is as follows: how can authentic storytelling grounded in witnessing, when confronting the decline of Sojas-River, transform ecological grief from a stagnant and passive condition into a dynamic grief that is ethical, action-oriented, and socially generative? This question is examined within the theoretical frameworks of dark tourism and LCT, since Sojas-River simultaneously embodies the historical suffering associated with Qanlıçay and represents a contemporary example of a landscape on the threshold of disappearance.

In extension of this central question, the study also seeks to address the following subsidiary questions:

1) What are the dimensions of ecological grief within the lived experience of stakeholders in the Sojas-River basin?

2) Through which mechanisms does authentic storytelling move the visitor from the mere observation of decline towards ethical and empathetic understanding?

3) What effect does a narrative-based encounter exert on ethical responsibility, empathy, and willingness to participate in regeneration?

Research Hypothesis

The principal hypothesis of the study is that authentic storytelling grounded in witnessing, by mediating the relationship between ecological grief and the ethical responses of audiences, can transform stagnant grief -manifested in passivity, emotional numbness, and withdrawal- into Dynamic Grief, expressed through ethical responsibility, empathy, and environmental activism. On this basis, it is expected that individuals exposed to authentic storytelling and witnessing will demonstrate higher levels of perceived ethical responsibility, greater empathy towards the local community, and a stronger willingness to participate in the regeneration of Sojas-River than those who merely undertake an ordinary visit.

Research Objectives and Contribution of the Study

The overarching objective of this research is to clarify the mechanisms through which storytelling, rather than intensifying suffering or contributing to the commodification of grief, may be directed towards ethical care and community regeneration, thereby transforming the suffering arising from ecological degradation in the Sojas-River basin into ecological awareness and environmental activism. The specific objectives of the study are as follows:

1) To examine the dimensions of ecological grief: to identify and analyze lived experiences and the threefold dimensions of grief -physical, identity-based, and Anticipatory Grief- as well as the phenomenon of Solastalgia among stakeholders in the Sojas-River basin.

2) To explain the interpretive role of storytelling: to analyze how authentic storytelling facilitates the transition from Stagnant Grief to dynamic grief within the context of LCT.

3) To provide a managerial framework for landscape restoration: to formulate models capable of balancing the authenticity of historical narratives associated with Qanlıçay with the production of new meanings conducive to community regeneration and heritage safeguarding.

4) To assess ethical responsibility: to evaluate the extent to which the process of witnessing strengthens ethical commitment and sustainable activism among visitors and local communities in relation to environmental crises.

The principal innovation of the present study lies in its development of a theoretical-empirical model in which authentic storytelling and witnessing are introduced as mediating mechanisms between ecological grief and regenerative activism within the context of LCT. By focusing on the Sojas-River, this model elucidates, within the Iranian context, the interrelationship between the vision of suffering, memory work, and ecological care.

Introduction to the Study Area: The Sojas-River Watershed

The Sojas-River originates from the southern slopes of the Agh-Dagh Mountain, northeast of the city of Qeydar. After traversing the city of Sojas and integrating with sub-basins such as Chapoq-Qamchqay, it joins the main flow of the Qizil Uzan River. From a geomorphological perspective, this river exhibits a V-Shaped cross-section and a young geological structure. The density of surrounding vegetation plays a critical role in moderating the river's hydraulic behavior (Arash et al., 2020) (Fig. 1).

Throughout history, this watercourse has functioned as more

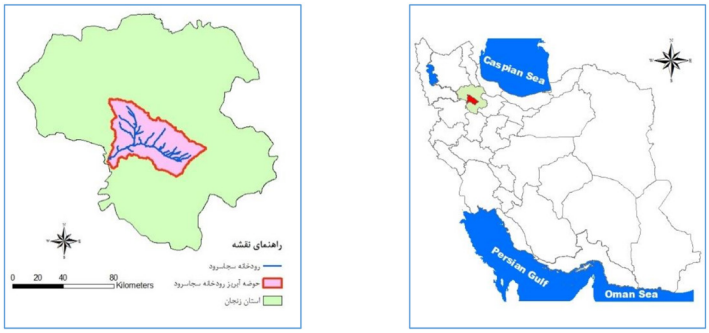

Fig. 1. Geographical location of the Sojas-River watershed. Source: Malekani & Abbasi, 2019.

than a mere hydrological channel; it has served as a focal point for meaning-making and cultural production. It has been the site for religious rituals, traditional harvest festivals, and extensive social interactions (Golmohammadi & Ehsani, 2026), constituting an inseparable element of the region's heritage landscape and collective memory.

Nevertheless, in recent decades, the crisis of water scarcity, erosion of the riverbed, and inadequate participatory management have disrupted the ecosystem services and cultural functions of this river, leading to a rupture in the age-old human-nature connection (Arash et al., 2020; Golmohammadi, 2022). The progressive drying of this vital artery has not only lowered groundwater tables and exacerbated climatic challenges such as dust storms but has also, through the decline of agricultural activities, contributed to increased poverty and unemployment in the rural settlements. These physical transformations have had profound consequences on the inhabitants' lifeworlds, leading to the weakening of identity affiliations and a sense of alienation from their native landscape (Solastalgia) (Golmohammadi, 2022). In confronting this multifaceted decline, adopting transformative approaches such as regenerative tourism can offer a holistic strategy for simultaneously restoring ecological structures and reconstructing the socio-cultural bonds of the region.

Research Method

• Research approach and logic: sequential explanatory mixed methods design

Given the multidimensional nature of "ecological grief" and the necessity to analyze its transformation into environmental activism within the Sojas-River basin, this study employs a Sequential Explanatory Mixed Methods Design. The logic behind selecting this design is to prioritize a deep phenomenological understanding (qualitative phase) as a prerequisite for any empirical and quantitative measurement (quantitative phase). In this methodological chain:

1) Qualitative phase (exploratory): Initially, themes of ecological grief were extracted from the lived experiences of the local community and experts.

2) Connecting phase (instrument and scenario development): The qualitative findings formed the basis for designing the quantitative questionnaire items and developing the intervention scenario.

3) Quantitative phase (experimental test): The effect of the intervention was evaluated using a quasi-experimental design (Fig. 2).

• Qualitative phase: thematic analysis

Participants and sampling method: The qualitative sample comprised local residents of the Sojas-River basin (with over 10 years of residency), environmental experts, and activists in the field of natural heritage. Criterion-purposive sampling was utilized.

Sample size and instrument: The data collection instrument was in-depth semi-structured interviews. Theoretical saturation was reached after conducting 18 interviews.

Data analysis: Thematic Analysis, following Braun and Clarke's approach, was applied to the interview transcripts. This process led to the extraction of three key themes: Physical grief: Perception of river degradation; Identity/solastalgic grief: Nostalgia and loss of connection to the place; Anticipatory grief: Concerns about the future habitability of the region.

• Quantitative phase: quasi-experimental design and sample

In the quantitative phase, a Pretest-Posttest Control Group Design was implemented.

Population and sample size: The target population consisted of visitors to Sojas River. Sixty eligible participants (meeting criteria of being over 18 years old and having no prior familiarity with the research scenario) were selected using convenience sampling.

Group assignment and bias control: Participants were randomly assigned to either an experimental group (30 participants) or a control group (30 participants). Randomization was performed at the group allocation level. To mitigate potential interaction effects between participants, the interventions for both groups were conducted on separate days but under identical climatic and environmental conditions.

Pretest equivalence assessment: Before the intervention, a pretest was administered to both groups. An independent samples t-test revealed no statistically significant difference between the mean pretest scores of the two groups ($p > 0.05$), confirming initial equivalence and a similar baseline for both groups.

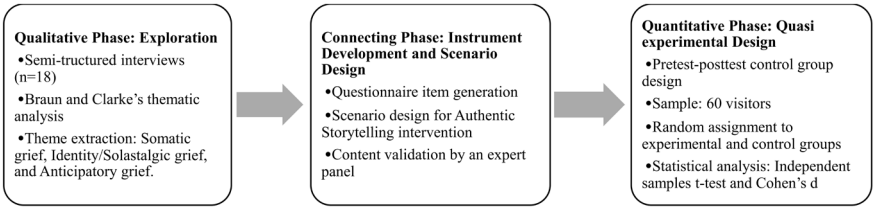

Fig. 2. Connecting phase of qualitative and quantitative aspects in the mixed methods research design. Source: Author.

• Questionnaire development, validity, and reliability

The research questionnaire was designed based on the themes extracted in the qualitative phase and the relevant theoretical literature. This questionnaire included Likert-scale measures (5-point).

Validity: To assess content validity, the questionnaire was reviewed by a panel of five specialists in landscape architecture, tourism, and environmental psychology. Content validity was confirmed after incorporating their suggested revisions.

Reliability: To test reliability, a pilot study was conducted on 15 participants from the target population. The Cronbach's alpha coefficient for the overall instrument was calculated at 0.84. The subscales yielded coefficients of 0. 79 for Dynamic Grief, 0. 82 for Ethical Responsibility, and 0. 85 for Activism, indicating good internal consistency and reliability for the questionnaire.

• Intervention protocol (authentic storytelling)

The intervention protocol was structured and implemented as follows to ensure complete clarity and eliminate "intervention ambiguity":

1) Visit duration and structure: The intervention involved a guided field excursion lasting approximately 45 minutes. It included three stops, with each stop featuring about 10-[12] minutes of narration, interspersed with transition times between stops:

Stop 1 (Bridge from sojas to changuor village): Focused on the dried riverbed and the physical degradation of the river.

Stop 2 (Areas around Qanliçay in Changuor village): Observation of land-use changes and biodiversity loss.

Stop 3 (Area around Qanlıçay in Zavinaq village): Presentation of the overall degraded landscape.

2) Experimental group intervention (Authentic storytelling): At each stop, a trained guide read pre-scripted narratives based on "oral histories of local residents, the local history of Qanlıçay, and physical evidence of ecological degradation." The delivery was emotional and semantic. At the end of the third stop, reflective questions regarding human ethical responsibility for this degradation were posed. To ensure replicability, the guide was committed to reading verbatim from a fixed, written script.

3) Control group condition (Ordinary visit): The control group followed the same route, stops, and duration with the same guide. However, the information provided was entirely neutral, descriptive, and statistical (e.g., watershed area, historical flow rates, general geological data), devoid of emotional, historical, or narrative content. To minimize researcher bias, the guide received prior training to avoid any emotional expression, value-laden emphasis, or suggestive body language during the control group's visit. Furthermore, the scripts for both types of presentation were written and timed to minimize deviations from the protocol, thus ensuring the replicability of the intervention.

4) Measurement sequence: The pretest was completed immediately before entering the site, and the posttest was administered right after the excursion concluded at the exit point for both groups (Table 1).

• Statistical data analysis methods

Quantitative data were analyzed using SPSS version 26.

An independent-samples t-test was employed to compare the mean posttest differences between the experimental and control groups (significance level α=0.05).

To estimate the practical impact of the intervention and determine the significance of the findings, Cohen's d (effect size) was calculated. According to Cohen's formula, values of $d \geq 0.8$ were interpreted as a large effect size. The intervention demonstrated strong efficacy for the key research variables of Dynamic Grief (d=0.91) and perceived Ethical Responsibility (d=0.85).

Literature Review

• Ecological grief and psychological responses to environmental degradation

The foundations of ecological grief are based on the premise that humans experience psychological processes similar to mourning the loss of loved ones in response to the disappearance of species, ecosystems, and the landscapes of their homeland (Cunsolo & Landman, 2017). Cunsolo et al. (2020) identify three primary dimensions of this grief: (1) grief arising from physical losses (such as the drying of a river), (2) grief stemming from the disruption of ecological knowledge and place identity, and (3) anticipatory grief resulting from the anticipation of future losses. These experiences are linked to the concept of "Solastalgia" (Albrecht, 2005), which refers to the feeling of distress and loss of meaning in a home that has become unfamiliar due to environmental changes. While classical literature focuses on the negative aspects of this grief, recent studies (Pihkala, 2022; Ojala et al., 2021) have pointed to the transformative potential of grief for moral awakening and activism.

• LCT and the consumption of landscapes of suffering

LCT, as a branch of sustainable tourism, focuses on tourist interaction with destinations that are in the

Table 1. Structural differences in the intervention protocol between the experimental and control groups. Source: Author.

Component	Regular visit (control group)	Authentic storytelling (experimental group)
Experience type	Observation-based, descriptive, and objective	Interpretive, guided, narrative, and meaning-making
Information content	General technical, geographic, and geological data	Oral memories, indigenous narratives of Qanlıçay, and signs of physical deterioration
Presentation protocol	Neutral presentation of statistical information at three stopping points (45 minutes in total)	Reading of a written narrative/emotional script at three stopping points (45 minutes in total)
Audience role	Passive observer and spectator of the physical landscape	Ethical, empathetic, and reflective witness to landscape deterioration
Bias control	No human narrative or reflective questions were provided	Standardized narrative delivery based on an expert-approved written scenario

process of disappearing (Lemelin et al., 2010). Studies (Dawson et al., 2011b) indicate that the motivation to witness "the last of something" carries the moral risk of intensifying degradation (Piggott-McKellar & McNamara, 2017). On the other hand, the link between LCT and "Dark Tourism" manifests in concepts such as "mortality" and "confrontation with catastrophe" (Stone, 2006). Stone & Sharpley (2008) believe that dark sites act as "mediating places" that bridge the world of the living and the reality of death, adding depth to collective memory. In this context, the Sojas-River (Qanlıçay) functions not merely as a natural destination, but as an embodied dark heritage, narrating past and present sufferings (Martini & Minca, 2021).

• Storytelling: the mediating mechanism in meaning transfer and regeneration

The role of storytelling in tourism extends beyond the transmission of information; it encompasses the "framing of experience" and "meaning-making." Goulding (2000) emphasizes the concept of "witnessing" in storytelling—a process that transforms the tourist from a consuming observer into a responsible witness. In sites under ecological distress, storytelling can overcome the gap between scientific knowledge and emotional experience (Asadipur, 2025). Eshaghi et al. (2024), in their studies, emphasize the necessity of "narrative authenticity" in the restoration of dark landscapes, believing that the accurate representation of the history and suffering of a place can lead to identity recovery and social regeneration.

• The discourse of care and regeneration in tourism

Finally, studies in the field of "care" in tourism seek modes of travel that emphasize "restoration" and "support" rather than consumption (Ward, 2020). By integrating these four domains (Grief, LCT, Storytelling, and Care), this research seeks to bridge the gap regarding how the grief resulting from the decline of a river (Sojas-River) can be transformed through storytelling into a driving force for ecological regeneration and care in Iran.

The literature review indicates that while each of the domains -ecological grief, last chance tourism, dark tourism, and storytelling- explains a part of the problem of landscape decline, sufficient theoretical and empirical links have not been established between them. The literature on ecological grief focuses mainly on the psychological and existential consequences of environmental destruction and rarely addresses how this grief can lead to social activism and regeneration within tourism contexts. On the other hand, LCT studies have primarily addressed motivations for visiting vanishing destinations and the moral paradox of consuming decline, but have provided few mechanisms to prevent the commodification of suffering. Similarly, the "dark tourism" literature shows that confronting death, catastrophe, and suffering can lead to moral remembrance and education, but this literature is mainly focused on human and historical catastrophes and less on the ecological decline of rivers and vanishing natural landscapes.

In this landscape, storytelling can act as a bridge between these domains. However, previous research has rarely shown empirically how authentic storytelling can transform a visitor from a passive observer into a responsible witness and shift ecological grief from a stagnant state to a dynamic one. This gap is more pronounced in the Iranian context, particularly regarding decaying rivers such as the Sojas River. Therefore, this study, by focusing on Qanlıçay, attempts to provide a theoretical-empirical model for transforming a landscape of suffering into a foundation for regeneration.

Accordingly, the primary gap in the literature lies not in identifying ecological grief or analyzing tourism motivations, but in explaining the interpretive mechanisms that can convert the experience of environmental grief into social activism. By focusing on the explanatory role of authentic storytelling within the context of LCT, this research endeavors to fill this theoretical and empirical gap in the context of Iran's declining rivers.

Theoretical Underpinnings

• Ontology of loss: ecological grief and Solastalgia

The theoretical foundation of this research rests on understanding human psycho-existential responses to the degradation of nature. Albrecht (2005), by introducing the concept of "Solastalgia", explains the existential distress that arises from unwanted environmental changes in an individual's homeland, an experience where one feels alienated and devoid of meaning while still physically present in their home. This concept was expanded in the studies by Cunsolo & Ellis (2018) and Cunsolo et al. (2020) into Ecological grief. According to

this theory, ecological grief is not merely a simple emotional reaction but a response that encompasses three dimensions: (1) physical losses (loss of ecosystems and species), (2) disruption of environmental knowledge and place identity, and (3) anticipatory grief rooted in anxiety about predicted future degradations. In the Sojas-River basin, this grief, intertwined with the historical name Qanlıçay, transforms from an individual sentiment into a collective and historical grief.

• The paradox of consuming decline: last chance tourism and dark sites

On a second layer, the research analyzes tourist behavior in the face of this grief. LCT describes a paradox where the scarcity and imminent disappearance of a phenomenon become an attraction for visitation (Lemelin et al., 2010; Dawson et al., 2011a). This approach is closely linked to Stone's (2006) theories of dark tourism. Stone (ibid.) posits that dark sites function as mediating places that offer tourists a safe space to confront death and suffering. In the case of the Sojas-River, this landscape of suffering serves as a site where historical suffering (deadly floods) and contemporary suffering (drought and environmental degradation) intersect (Barnett, 2022; Varutti, 2024). However, the primary risk here is the commodification of grief, wherein the suffering of others is transformed into a product for voyeuristic consumption (Piggott-McKellar & McNamara, 2017).

Recent studies in dark tourism have shifted the emphasis from mere consumption of suffering towards awareness generation. Yoshida et al. (2016), in their study of the Hiroshima and Nagasaki sites, introduced the concept of shining a light on darkness. Their findings suggest that if a catastrophe (death and destruction) is framed through interpretative processes and authentic storytelling, it can transform from a historical impasse into a catalyst for peace and education. Essentially, they argue that tourism at disaster sites has the potential, through deep engagement, to transform a passive observer into an aware subject who is responsible for preventing the recurrence of catastrophe in the future.

• Storytelling as a mediating mechanism: from stagnant grief to dynamic grief

The theoretical core of this research lies in the role of storytelling in transforming the nature of grief. Pihkala (2022) and Cunsolo & Landman (2017) draw a crucial distinction between stagnant grief and dynamic grief. Stagnant grief leads to passivity, environmental depression, and numbness, while dynamic grief can become a force for environmental activism and ethical commitment. Goulding (2000) explains the process of this transformation through witnessing, where authentic storytelling turns the tourist from a consuming observer into a responsible witness. In the context of landscape architecture and environmental design in Iran, Eshaghi et al. (2024) emphasize that narrative authenticity in the restoration of damaged landscapes is key to reinterpreting identity and re-establishing the connection between the community and the place. Asadipur (2025) also believes that storytelling in Iran's dark sites should transcend official narratives and remain faithful to the lived experience and the hidden sufferings of the local community.

• Ethics of care and regeneration in supportive tourism

Ultimately, the overarching goal of this theoretical chain is to arrive at a discourse of care. Ward (2020) and Ojala et al. (2021) believe that the response to environmental crises must grow from within an ethical framework based on compassion and responsibility. In the realm of tourism, this concept culminates in regenerative tourism (Golmohammadi & Ehsani, 2026), which aims not only to reduce harm but also to actively heal and improve the destination (Njoroge, 2014). Accordingly, the theoretical model of this research is based on the premise that: confronting ecological suffering in Sojas-River (through Last Chance Tourism and Dark Tourism), if accompanied by the mediating mechanism of authentic storytelling and witnessing, can transform the resultant grief from a passive state into dynamic grief, ultimately leading to environmental activism and supportive care for the region's natural and cultural heritage (Pihkala, 2022; Eshaghi et al., 2024).

Based on the research's theoretical framework, the Qanlıçay, as a landscape of suffering, lies at the intersection of two types of loss: first, historical suffering stemming from floods and fatalities recorded in collective memory, placing it within the domain of dark tourism; second, the contemporary degradation of the river, reduced water flow, and the weakening of its ecological and cultural functions, turning it into an example of last chance tourism. Confronting such a landscape can create two distinct paths. In the first path, if the place's suffering is represented without ethical and narrative contextualization, the commodification of suffering, voyeuristic consumption of decline, emotional numbness, and stagnant grief are likely to increase. In the second path, if the encounter with the place is guided through authentic storytelling and witnessing, the experience of loss can lead to understanding, empathy, ethical responsibility, and environmental activism.

Within this research's theoretical framework, each concept plays a distinct role in explaining the transition from stagnant grief to dynamic grief. Ecological Grief describes the initial emotional state resulting from environmental decline, while Solastalgia illuminates the identity and place-based dimension of this grief. Dark Tourism provides the framework for confronting the historical suffering of the place, and LCT emphasizes the urgency of encountering landscapes on the brink of disappearance. In this context, Authentic and Witness-Centric Storytelling acts as the mediating variable, transferring the experience of suffering from the level of passive observation to the realm of ethical engagement and environmental activism (Fig. 3).

Findings

Consistent with the mixed methods design employing an exploratory sequential logic, the findings of this research are

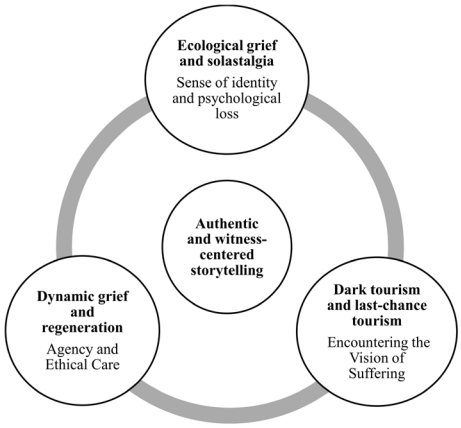

Fig. 3. Conceptual model of transition from stagnant grief to dynamic grief in the Sojas-River landscape. Source: Author.

presented in two sections: qualitative and quantitative. First, a thematic analysis of the lived experiences of local stakeholders is presented, followed by a quantitative assessment of the effect of authentic storytelling on visitors' ethical and environmental responses. These findings illustrate the process of transition from ecological suffering to social regeneration through the explanatory role of authentic storytelling.

• Qualitative findings: dimensions of ecological grief in the Sojas-river basin

As observed in Table 2, the analysis of data from local interviews led to the identification of three main themes of ecological grief: Physical Grief, Identity Grief (Solastalgia), and Anticipatory Grief. The high frequency of codes related to ecological landscape degradation (42 times) and "destruction of water-dependent livelihoods (35 times) indicates that feelings of physical and economic loss are highly prevalent among residents.

Some direct statements from participants that form the basis of the research's theoretical model are as follows:

A local resident describing physical grief: "In the past, you could hear the sound of water from the farmlands. Now, when we pass by the river, only a stream remains; it's as if a living being is slowly dying before our eyes."

The identity and solastalgic dimension in the words of a participant: "We still live here, but this place is no longer like our old homeland. One feels like a stranger even in their birthplace."

Concern for the next generation (anticipatory grief): "At least we have memories of 'Qanlıçay.' I fear our children won't even have memories of the Sojas River."

Another participant, explaining the sense of alienation from Qanlıçay, stated: "Qanlıçay was not just the name of a river for us; it was part of our lives, our fears, and our respect for nature. Now, when we look at its drying bed, it's as if the name remains, but its soul is gone."

Another participant described this experience: "We grew up by this very river; weddings, harvest festivals, and gatherings were all dependent on the water. Today, we walk the same paths, but nothing connects us to that past anymore; it's as if the Sojas-River has been separated from our memory."

Simultaneously, solastalgia, as the identity dimension of grief, manifested through nostalgic phrases like "we are strangers in our own home" and "forgetting local traditions." Finally, anticipatory grief speaks of the fear of social collapse and the lack of an ecological heritage for future generations. These themes paint a picture of a cognitive transition from active trauma to an ecological void, forming the basis for subsequent analysis.

• Quantitative results: evaluating the effect of authentic storytelling on dynamic grief and environmental activism

The second phase of the research aimed to examine the relationships among the main variables and to evaluate the effect of the authentic storytelling intervention. Initially, Pearson correlation coefficients were used to analyze the relationships between variables. The results of the correlation matrix are presented in Table 3.

According to the results, a positive and significant relationship was observed between authentic storytelling and dynamic grief ($r = 0.62$, $p < 0.01$, 95% CI [0.41, 0.77]). Authentic storytelling also showed a positive and significant correlation with environmental activism ($r = 0.55$, $p < 0.01$, 95% CI [0.32, 0.72]). Furthermore, a relatively strong and significant relationship was

Table 2. Dimensions of ecological grief and extracted themes (Qualitative Phase). Source: Author.

Main theme	Sub-theme	Illustrative quote or indicator	Frequency (code)
Grief stemming from physical loss	Ecological landscape degradation	"The river flow has significantly decreased, exposing parts of its bed."	42
	Destruction of water-dependent livelihoods	"The loss of riverside orchards and a resulting sense of economic despair."	35
Identity-based grief and solastalgia	Destruction of water-dependent livelihoods	The forgetting of local rituals associated with the river (such as harvest festivals).	28
	Alienation from the homeland	"We are in our own homeland, yet we feel like strangers."	31
Anticipatory grief	Anxiety over social disintegration	Concerns regarding forced migration and the depopulation of villages in the Sajas-River basin	20
	Loss of heritage for future generations	"There is nothing left of Qanlıçay for our children."	18

Table 3. Comparison of posttest mean scores between the experimental and control groups following the authentic storytelling intervention, including effect sizes. Source: Author.

Outcome variable	Experimental group (M)	Control group (M)	t	Sig.	Cohen's d	95% CI of mean difference	Interpretation
Perception of ethical responsibility	4.45	2.80	6.12	0.001	0.85	1.10 - 2.20	Large effect
Propensity for regenerative engagement	4.12	2.45	5.88	0.000	0.82	1.05 - 2.18	Large effect
Dynamic grief (transformation of suffering into awareness)	4.05	2.15	7.34	0.000	0.91	1.35 - 2.45	Large effect

Note: Effect size calculated based on Cohen's d; values greater than 0.80 indicate a large intervention effect.

observed between dynamic grief and environmental activism ($r = 0.68$, $p < 0.01$, 95% CI [0.49, 0.81]). This pattern indicates that the more sincere and lived-experience-based the presented narratives, the greater the likelihood of transforming passive grief into dynamic grief and strengthening the inclination towards environmental activism. In other words, authentic storytelling can act as an interpretive mechanism connecting the experience of environmental loss with the formation of ethical and action-oriented responses.

In the second step, to investigate the effect of the authentic and witness-centric storytelling intervention, the mean scores of the experimental and control groups in the posttest were compared using an independent samples t-test. Before the intervention, the pretest results showed no significant difference between the groups in the variables under study; therefore, the observed changes in the posttest phase can be attributed with greater confidence to the storytelling intervention.

The results of the mean comparison indicated that participants in the experimental group achieved significantly higher scores than the control group in all variables examined. Beyond statistical significance, Cohen's d effect size for the variables of perceived ethical responsibility ($d = 0.85$), willingness to participate in regeneration ($d = 0.82$), and dynamic grief ($d = 0.91$) falls within the "large" range, indicating a considerable practical significance of the intervention. These results suggest that exposure to authentic and witness-centric narratives can shift the experience of ecological grief from a passive state towards a more conscious and active form of grief.

The comparison of means also showed that the willingness to participate in landscape regeneration increased by approximately 68% in the experimental group compared to the control group. This percentage was calculated from the difference in mean scores between the two groups: $((4.12 - 2.45) / 2.45 \times 100 \approx 68\%)$. This index is reported as a descriptive estimate of the magnitude of the difference between the two groups and does not replace inferential tests or effect sizes.

Despite the relatively large effect sizes, it should be noted that due to the limited sample size and the use of convenience sampling, generalizing the findings requires caution. Therefore, it is recommended that future research replicate this model with larger samples and provide detailed confidence intervals and advanced analyses.

• Hypothesis testing and the explanatory role of authentic storytelling

The results of the independent samples t-test, reported in Table 3, show a statistically significant difference between the experimental group (with witness-centric narratives) and the control group (ordinary visit). The index of "transformation of suffering into awareness" was significantly higher in the experimental group ($t = 7.34$, $p < 0.001$). Furthermore, the indicators of "perceived ethical responsibility" ($t = 6.12$, $p = 0.001$) and "willingness to participate in regeneration" ($t = 5.88$, $p < 0.001$) were also reported as significantly higher in the narrative-focused group compared to the control group.

These findings support the main hypothesis of the research, indicating that authentic storytelling can act as an interpretive mechanism linking the experience of ecological grief with the formation of ethical responses and environmental activism. In other words, when the experience of environmental degradation is framed through witness-centric narratives, grief moves beyond a stagnant and passive state to become dynamic and purposeful, directing towards ethical responsibility and participation in social regeneration.

• Transition to supportive care and social regeneration

The combined results from the qualitative and quantitative phases demonstrated that when the process of authentic storytelling fosters the dynamism of grief, it creates the necessary conditions for the emergence of supportive care and regenerative tourism models. This transition not only led to a 68% increase in visitors' willingness for voluntary participation in river restoration but also transformed environmental depression into demanding resilience among local residents. In essence, authentic storytelling has managed to break the silence of loss, transforming the Sojas River from an "ecological graveyard" into a "public space for the reproduction of hope and activism.

• Interpretation of the practical significance of findings

Although the statistical results indicate significant relationships between authentic storytelling, dynamic grief, and environmental activism, the primary importance of these findings is not confined to the statistical level. The difference in means between

the narrative-focused group and the ordinary visit group reveals that the manner of encountering a landscape of suffering plays a decisive role in shaping the audience's response. In other words, simply visiting a declining river does not inherently lead to responsibility or activism; rather, it is authentic storytelling that, by connecting environmental data, local memories, and ethical questions, transforms the experience of loss into practical commitment.

From a practical standpoint, these findings suggest that tourism programs in affected destinations should not solely focus on showcasing attractions or highlighting crises. Instead, the design of the tourism experience should incorporate interpretive mechanisms, local narratives, opportunities for volunteer participation, and clear pathways for restorative action. Therefore, authentic storytelling can be employed as a tool for meaning management in the regeneration of crisis-affected landscapes.

Discussion

This study aimed to elucidate the explanatory role of authentic storytelling in transforming the nature of ecological grief and fostering social regeneration in the Sojas-River basin. The qualitative findings revealed that ecological grief in the Sojas-River landscape encompasses three key dimensions: physical, identity-based (solastalgia), and anticipatory grief.

Quantitatively, the results demonstrated that exposure to authentic storytelling can successfully transmute this grief into dynamic grief and environmental activism. The core findings further indicate that confronting the decline of this river (historically known as Qanlıçay or the Bloody River) holds paradoxical potential: the degraded landscape can serve as a psychological dead-end leading to environmental passivity and depression, or, through the narrative mechanism of storytelling, it can become a catalyst for ethical commitment and sustainable, restorative action.

• Elucidating the mechanism of grief transformation: from passivity to activism

The qualitative phase findings highlighted that residents and stakeholders of the Sojas-River basin experience profound levels of solastalgia and identity-based grief. Interpreting these findings suggests that environmental degradation, beyond causing physical and structural damage, has led to a deep semantic instability in the lifeworlds of local individuals. However, the statistically significant difference in dynamic grief scores in the experimental group (Table 3) confirms that authentic storytelling successfully breaks through the psychological impasse caused by environmental loss.

Unlike official, top-down narratives, which often focus exclusively on the technical, hydrological, and statistical aspects of ecological crises, witness-centric storytelling relies on lived experience. By doing so, it bridges the psychological gap between the audience and the place's suffering. This process shifts grief from a stagnant state (characterized by a semantic void and helplessness) to a "dynamic" state (facilitating the creation of new meaning). The observed 68% increase in the willingness to participate in conservation and restoration initiatives serves as empirical evidence that the emotional energy derived from grief, when framed through authentic storytelling, transforms into a concrete ethical commitment.

• The challenge of commodification and the paradox of last chance tourism

The results of this study challenge traditional concepts within LCT. While prior literature (Piggott-McKellar & McNamara, 2017) emphasizes the risk of the commodification of destruction -where ecological decline is turned into a consumable product for tourists- our findings suggest that storytelling grounded in authenticity prevents this reduction of suffering.

In the Sojas-River basin, the connection between the historical name Qanlıçay (representing past historical suffering and flash floods) and the contemporary drought (representing present ecological suffering) creates a powerful historical continuity. This continuity allows both tourists and the local community to perceive themselves not as mere passive observers of a landscape's decline, but as responsible witnesses to an ongoing historical process. This transformation elevates tourism from a consumptive, voyeuristic act to a regenerative one, where preserving collective memory and active ecological restoration become shared objectives.

• Linking eco-anxiety with the ethics of care

In alignment with global research trends (Hickman et al., 2021), the survey findings of this research indicate a deep intertwining of eco-anxiety with the major life decisions and existential outlooks of local stakeholders. However, rather than viewing this anxiety as a "pathological disorder" to be suppressed, we interpret it as a form of ethical awakening.

According to the literature on pastoral care (LeMothe, 2021), when storytelling mediates between individual responsibility and structural drivers of degradation, anxiety transforms into a stimulus for supportive care. Within this framework, the Sojas-River acts as a mediating place where suffering and grief, through educational, narrative, and ritualistic experiences, are converted into a constructive force for healing and ecological regeneration.

• Managerial and landscape implications: towards a green landscape design framework

To practically realize the transition to dynamic grief, the study proposes that the psychological outcomes of storytelling be integrated into a spatial and managerial model. The "Green Landscape Design-Management Approach" (Mohajer Milani et al., 2026), as a framework for sustainable landscape regeneration, can translate this abstract ethical commitment into concrete environmental actions.

This model, which emphasizes social justice, public participation, and the restoration of ecosystem services, provides a structural foundation for elevating supportive care from a fleeting

emotion to a permanent action structure. Essentially, authentic storytelling creates the necessary regenerative mindset, while the Green Landscape Design-Management Approach realizes the corresponding regenerative objectivity in the Sojas-River basin.

The transformation of stagnant grief into dynamic grief in the Sojas-River basin bears a close semantic and functional resemblance to the findings of Yoshida et al. (2016) regarding atomic bomb sites in Japan. Just as storytelling in Hiroshima managed to extract the profound meaning of peace from the ashes of devastation, witness-centric storytelling in the Sojas-River basin shines a light on the darkness caused by ecological decline.

This research demonstrates that Qanlıçay is not merely a destination for observing destruction, but a place-medium for ecological awakening, a site where the landscape's suffering, through narrative, is transformed into an ethical commitment to preservation and regeneration. In essence, re-reading the Sojas-River landscape proves that to heal the wounds of the earth, one must first dare to grieve for them, and then, from within that grief, extract a language for care, design, and regeneration.

- **Limitations and future research directions**

Despite confirming the explanatory role of authentic storytelling, this study faced several limitations:

1) Temporal durability: The difficulty in measuring the long-term sustainability of activism and environmental commitment among participants over extended periods.

2) Socio-political variables: The influence of macro-level political-economic factors on how different visitor demographics perceive ecological decline.

Consequently, future research should focus on:

Investigating the role of emerging representation technologies (such as augmented reality and immersive virtual environments) in deepening dark tourism narratives and solastalgic engagement.

Analyzing the role of regional educational systems in institutionalizing the "ethics of care" in ecological crisis zones.

Conclusion

By exploring the intersection of human suffering and ecological degradation, this study demonstrated that the paradox of LCT in the Sojas-River basin constitutes an opportunity for ecological awakening rather than merely an environmental threat. The empirical results confirm that when ecological grief is left unmediated in a semantic vacuum, it leads to passivity, emotional numbness, and alienation from place (solastalgia). However, when mediated by authentic storytelling and witnessing, it is restructured into Dynamic Grief, resulting in a 68% increase in visitors' willingness to participate in landscape regeneration.

This research establishes that ecological grief in declining landscapes does not inevitably result in social apathy. When the experience of environmental loss is framed and represented through authentic, witness-centric narratives, it enhances empathy, perceived ethical responsibility, and active engagement in environmental restoration.

The primary academic contribution of this paper lies in presenting a narrative-based mediation model that transforms a Vision of Suffering into a catalyst for Community Regeneration. These findings suggest that the management of degraded landscapes in Iran must transition from purely engineering-focused paradigms toward meaning-management and supportive tourism. It is recommended that future studies investigate the integration of novel interactive technologies, such as Augmented Reality (AR), to enhance witness-centric storytelling along the Sojas-River and other declining river systems in Iran. Although the physical channel of the Sojas-River (Qanlıçay) is currently drying, authentic narratives possess the capacity to transform this ecological void into a channel of environmental consciousness. The regeneration of vanishing landscapes requires the simultaneous restoration of ecological infrastructure and the meaning-based bonds connecting society to place. Ultimately, the Sojas-River stands as evidence that landscape regeneration begins not with rigid engineering interventions, but with the restoration of emotional and ethical bonds between humanity and the land. So mote it be.

Conflict of Interest

The author declares no conflict of interest regarding this study.

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