heritage

MDPI

Article

Transhumance as Biocultural Heritage in Island Territories: Conservation Challenges and Tourism Opportunities in Gran Canaria (Spain)

Claudio Moreno-Medina [1], Juan Manuel Parreño-Castellano [1,*], Ilaria Gesualdi [2] and Javier Gil-León [3]

[1] Research Institute of Textual Analysis and Applications (IATEXT-ULPGC), Department of Geography, University of Las Palmas de Gran Canaria, 35003 Las Palmas de Gran Canaria, Spain; claudio.moreno@ulpgc.es
[2] Scientific and Social Innovation (DIUSS), Department for Humanistic, Basilicata University, 75100 Matera, Italy; ilaria.gesualdi@unibas.it
[3] Livestock and Fisheries of the Government of the Canary Islands, Regional Ministry of Agriculture, 35004 Las Palmas de Gran Canaria, Spain; jgilleo@gobiernodecanarias.org
* Correspondence: juan.parreno@ulpgc.es

Abstract

This article analyses contemporary transhumance in Gran Canaria as a singular case of insular pastoralism and biocultural heritage within the Mediterranean and Atlantic contexts. While transhumance has been widely recognised for its ecological, cultural and socio-economic relevance, in Gran Canaria it persists in an especially fragile form, maintained by a small, ageing group of herders. Drawing on an interdisciplinary methodology that combines 36 semi-structured interviews, ethnographic fieldwork and GIS-based spatial analysis of routes and grazing areas, the study characterises the socio-ecological functioning of the system, its environmental and cultural contributions, and the threats it faces. The results highlight the role of transhumance in sustaining agrobiodiversity, fire prevention, ecological connectivity and traditional ecological knowledge, as well as in shaping a distinctive pastoral soundscape, toponymy and material culture. At the same time, the system is undermined by demographic ageing, land fragmentation, urban and tourism pressure, bureaucratic burdens and climate uncertainty. The article examines emerging initiatives in cultural and experiential tourism linked to cheese production, wool and participatory transhumant journeys, arguing that tourism can support, but not substitute, the protection of pastoral livelihoods. It concludes by outlining policy implications for island territories, emphasising the need for integrated governance that recognizes transhumance as living heritage and a strategic tool for cultural landscape management.

Keywords: biocultural heritage; transhumance; cultural landscapes; experiential tourism; islands

Academic Editors: Fátima Matos Silva and Isabel Vaz de Freitas

Received: 30 November 2025
Revised: 26 December 2025
Accepted: 4 January 2026
Published: 6 January 2026

1. Introduction

Transhumance is a mobility-centred agro-pastoral system based on seasonal herd movements—over varying distances and often altitudinal—between complementary pastures, together with the associated knowledge, infrastructure and household practices (e.g., temporary residence, stabling, and product processing) that make this seasonal land-use possible. Its historical presence is documented across Europe (Mediterranean, Alpine

and Nordic regions) and beyond—including the Middle East, the Maghreb, and vast areas of Asia and Africa—where it has shaped landscapes and sustained resilient pastoral economies [1]. It constitutes an extensive land-management system of great cultural, ecological and social importance, internationally recognised by UNESCO (United Nations Educational, Scientific and Cultural Organization) through the inscription of transhumance on the Representative List (2019; extended as a broader multinational element in 2023) and, more recently, the related Scandinavian tradition of summer farming at fäbod and seter (2024). This inscription identifies transhumance as an example of sustainable lifeways, traditional knowledge and the historical articulation between communities and territory [2]. This recognition has stimulated academic interest in its heritage value, its role in biodiversity conservation and its potential contribution to contemporary sustainability goals, which are now widely acknowledged [3–5].

Despite this, transhumance is clearly in decline at the global level. Nevertheless, it persists in multiple contexts, although with varying intensity and, in many cases, under pressures that jeopardise its continuity. In countries such as Spain, Italy and Greece, networks of drove roads and seasonal cycles continue to sustain pastoral cosmologies, traditional ecological knowledge and extensive herding practices adapted to local environmental conditions [6–8]. In North African regions, these practices constitute a paradigmatic form of biocultural heritage that is still very much alive and that integrates mobility, knowledge and sustainability [9]. Thus, far from being a relic of the past, transhumance remains a key model for understanding contemporary interactions between culture, territory and climate resilience across many regions.

Within this global context, Gran Canaria represents a singular case within Spanish territory (Figure 1): it is the only island landscape where transhumance remains an active practice. The island, with a surface area of 1560 km^2 and a maximum elevation of 1956 m at Morro de la Agujereada, offers a highly diverse ecological gradient that enables vertical pastoral mobility. With a history spanning more than two millennia, transhumance has shaped distinctive cultural landscapes structured around seasonal movements between mid-altitude zones and mountain summits, taking advantage of marked bioclimatic variation [10]. Although the number of herders on the island has declined significantly in recent decades [11], the practice endures and maintains a high biocultural value, reflected both in the transmission of pastoral knowledge and in the production of artisanal cheeses, as well as in the persistence of a historic network of drove roads that remains in use.

Despite the growing body of research on transhumance and its ecological and cultural dimensions, insular forms of transhumance and their articulation with tourism remain largely understudied. In particular, there is limited empirical evidence on how living transhumant practices in island contexts contribute to biocultural heritage preservation while being mobilised as resources for experiential and sustainable tourism.

Previous research on Gran Canaria has documented transhumance from historical and descriptive perspectives, analysing its role in territorial articulation and cultural landscape formation and providing a first systematic mapping of routes, shepherds and pastoral infrastructures on the island (see [10,11]). Building on this foundation, the present article adopts a more integrated socio-ecological and policy-oriented perspective, combining ethnographic fieldwork and spatial analysis to examine how a still-living insular transhumant system contributes to biocultural heritage and is being mobilised within emerging forms of experiential and sustainable tourism. In doing so, the study advances debates on transhumance, heritage and tourism by positioning Gran Canaria as a critical case through which to explore the opportunities and limits of using living pastoral practices as a resource for island landscape management and rural development.

https://doi.org/10.3390/heritage9010015

From an island-studies perspective, the distinctiveness of insular pastoralism lies not only in the fact that it takes place on an island, but in the geographical and social conditions often described as 'islandness'. Islands are bounded territories with clear limits, where the sea acts as a barrier and filter shaping mobility, markets and governance. Land is finite and highly contested, leaving limited spatial room for manoeuvre when routes are disrupted or pastures are lost; at the same time, steep ecological gradients can be compressed into short distances, enabling efficient vertical mobility and a tight coupling between herding practices and local bioclimatic variability. These conditions mean that island transhumance can be simultaneously more vulnerable (because alternatives are few) and potentially advantageous (because a clearly delimited landscape can facilitate integrated planning and heritage-based tourism).

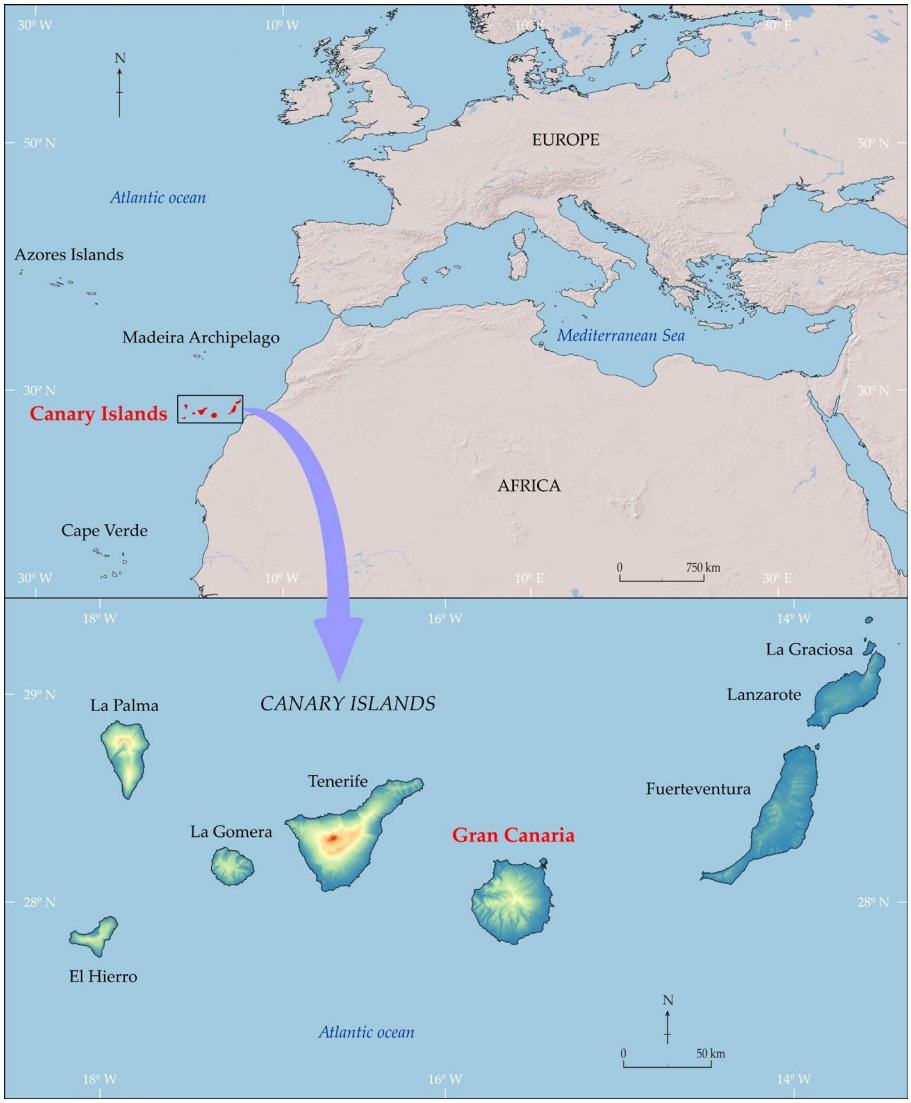

Figure 1. Location map. Source: Own elaboration. Base map derived from ArcGIS Pro 3.5 and GRAFCAN (Canary Islands Cartography Ltd.).

Research Objectives and Questions

To guide the analysis, this study pursues three objectives: first, to describe the main socio-ecological and cultural characteristics of transhumance in Gran Canaria; second, to analyse the threats and vulnerabilities it currently faces; and third, to assess its potential as a resource for sustainable tourism models and heritage-based experiential activities linked to living rural cultures.

Accordingly, the study seeks to answer three research questions: How does the still-active transhumance of Gran Canaria contribute to the preservation of the island's biocultural heritage? In what ways can it be sustainably integrated into experiential tourism strategies, with the aim of supporting its continuity amid current demographic, territorial and socio-economic pressures on the island? And, to what extent does the island condition—boundedness, spatial closure and limited alternatives—operate as an obstacle and/or a benefit for sustaining transhumance and for integrating it into heritage-based tourism strategies?

Methodologically, the article adopts an interdisciplinary design that combines qualitative fieldwork with spatial analysis, integrating semi-structured and walking interviews, participant observation, documentary review and GIS-based mapping of routes, grazing areas and pastoral infrastructures. This approach makes it possible to reconstruct contemporary mobility patterns and the socio-ecological functioning of transhumance in Gran Canaria while foregrounding herders' narratives as key carriers of traditional ecological knowledge. Empirically, the study provides one of the first in-depth analyses of a living insular transhumant system, showing how it simultaneously sustains agrobiodiversity, fire prevention, ecological connectivity and pastoral heritage, yet operates under acute demographic, territorial and institutional pressures. More broadly, the article advances debates on transhumance, tourism and biocultural heritage by conceptualising Gran Canaria as a critical case through which to explore how experiential and heritage-based tourism can support—but not replace—the protection of pastoral livelihoods and cultural landscapes in island territories.

To address these questions, the article is structured into four sections: first, a state-of-the-art review on transhumance and tourism; second, the methodology; third, the main results, including ecological and cultural values, threats and tourism potential; and finally, a discussion followed by conclusions and recommendations.

2. Transhumance and Tourism

Building on this background, transhumant livestock farming provides a crucial lens for understanding the interrelations between culture, landscape and sustainability. Although transhumance has historically been practised across the world [1], it has held particular significance within the Mediterranean region. In Spain, transhumance is structured around extensive networks of cañadas reales (royal transhumance routes), such as the Cañada Real de la Plata, the Cañada Conquense and the Cañadas Reales Castellanas, that traverse plateaus and mountain ranges from Castilla y León in the north of the country to Andalusia in the south, intersecting culturally valuable ecosystems such as the Extremaduran dehesa [5,6]. Comparable dynamics are found in Italy, where traditional routes connect the Abruzzo region with the plains of Puglia [7], and in Greece, where Vlach shepherds maintain centuries-old pathways between the Pindus Mountains and the Aegean coast [8]. Similar concerns about the preservation of historic pastoral routes have been documented in Malta, where pastoral droveways are now recognised as a threatened element of the island's cultural landscape [12]. Beyond Europe, pastoral mobility persists in North Africa [9] and, with adaptations shaped by insular environments, on mid-Atlantic islands such as the Canary Islands [11,13].

Beyond the Mediterranean, a substantial body of work has examined short-distance, mainly vertical forms of transhumance in mountain and Nordic regions. In the Alps, seasonal movements between valley farms and high-altitude summer pastures are often discussed under terms such as Almwirtschaft in Scandinavia [14], related practices are referred to as fäboddrift (Sweden) and seterbruk/stølsbruk (Norway), where mobility is inseparable from a wider household economy and land-use logic, including temporary residence at summer farms, on-site milk processing, and the maintenance of associated paths,

https://doi.org/10.3390/heritage9010015

huts and enclosures [15,16]. This broader 'system approach' resonates with what we document in Gran Canaria, where herd mobility is embedded in an integrated agro-silvopastoral cycle anchored in the medianías and extended to seasonal highland pastures. This literature also highlights the sustainability implications and ecosystem-service outcomes of mountain summer grazing under different management regimes [17,18]. The contemporary relevance and fragility of these traditions, including their links to rural diversification and tourism, has been widely discussed [16,19,20] and has also been underscored by recent UNESCO inscriptions, including "Summer farming at fäbod and seter" (Sweden and Norway) on the Representative List in 2024 [21].

Today, transhumance has been abandoned or is clearly in retreat in many regions [22], despite being a biocultural system whose historically sustainable interactions among natural, cultural and economic spheres have shaped highly valued landscapes as socio-ecological constructions resulting from long-term human–environment coevolution. Transhumance is therefore not merely a productive strategy but a way of life, expressed through specific forms of social organisation and embodied in both material and intangible cultural heritage [3].

Its material dimension is reflected in the network of routes, cañadas and rural architectural features associated with pastoral mobility, while its intangible dimension encompasses knowledge systems, rituals, beliefs, festivities and symbolic representations that sustain the cultural identity of pastoral communities [23]. This heritage also plays a critical role in articulating local identities and reinforcing social cohesion. In Mediterranean and Atlantic-insular contexts, transhumance has historically forged networks of sociability, exchange and cooperation that transcend administrative and ecological boundaries [10].

From an ecological perspective, transhumance has decisively shaped complex cultural landscapes such as Iberian dehesas (wooded pasture system) and Alpine grasslands, where herd mobility maintains habitat diversity, ecological connectivity and soil fertility. Livestock movement has been shown to enhance long-distance seed dispersal [24] and to sustain biodiversity, improve soil nutrient cycles and increase forage productivity [25]. Several studies also highlight that mobile grazing reduces fuel accumulation in mountain and forest ecosystems, thereby contributing to wildfire prevention [26,27]. For these reasons, transhumance plays an essential role in sustainability and in the fight against climate change. Its contribution aligns closely with the United Nations Sustainable Development Goals (SDGs), through extensive pasture management, ecosystem conservation and the transmission of traditional ecological knowledge.

The interdependence between transhumant culture and environmental sustainability is bidirectional [28], a point also underscored by recent work on Andorran transhumance heritage using systems-based conservation tools [29]. Preserving the cultural and social foundations of transhumance thus becomes an environmental strategy in its own right, echoing the arguments of Pretty et al. [30]. This integration is visible in numerous territorial contexts: in the Pyrenees, where transhumant practices are incorporated into conservation and sustainable tourism policies in protected areas such as Aigüestortes, Ordesa and the Parc National des Pyrénées; in Norway, where Sámi reindeer migrations constitute a living expression of traditional ecological knowledge and indigenous governance of Arctic landscapes [31]; and in Morocco's Atlas Mountains, where vertical pastoral mobility between valleys and high pastures represents a paradigmatic form of Atlantic–African biocultural heritage [9].

In recent years, transhumance has also been interpreted as a model of rural circular economy, incorporating biophysical cycles, waste valorisation, multifunctionality and associated ecosystem services [32,33]. In parallel, pastoral routes and landscapes have acquired growing relevance as tourism resources capable of diversifying rural economies through cultural, ethnographic and nature-based tourism [34–36]. Initiatives such as the

Festival de la Trashumancia in Madrid (Spain), the Tratturo Magno trekking route in Italy and pastoral ecotourism itineraries in the French Alps illustrate the synergy between conservation, tourism and local development. Within this framework, transhumance supports responsible forms of tourism that recognise pastoral mobility and landscapes as laboratories of sustainability and biocultural diversity [37,38].

According to the World Tourism Organization, rural tourism refers to experiences rooted in nature-based activities linked to agriculture and traditional rural lifestyles, typically taking place in low-density areas dominated by agricultural and forestry land uses [39]. Transhumance fits squarely within this definition. Tourism activities connected to pastoralism constitute a specific form of rural tourism that Monllor Rico and Soy Massoni [40] describe as "pastourism", encompassing experiences that range from walking along sheep tracks or staying in rural accommodation to engaging with pastoral products such as wool and cheese, or interacting directly with herders through participatory workshops.

In recent years, tourism experiences of this kind have become increasingly common. A prominent example is La Routo, a cross-border hiking trail that follows historical transhumant networks and connects Provence (France) with Piedmont (Italy) [41]. Originating in collaboration between the French Maison de la Transhumance and the Italian Unione Montana Valle Stura, the project initially sought to revitalise pastoral activity [36] but has also promoted tourism development along the entire route and supported the recovery of endangered sectors such as wool production. In Italy, regions historically associated with transhumance have seen the rise of pastoral tourism initiatives, such as participatory events organised by the Santorsa family in Basilicata with support from the cultural association Fuorisentiero. These activities, held twice a year since 2021 [42], demonstrate the potential of pastourism to flourish both through institutional programmes and through spontaneous community-based initiatives.

In Spain, Law 3/1995 on Livestock Routes—which authorises compatible uses on livestock routes—has facilitated initiatives such as Somos Trashumantes, an experiential activity organised by the Mancomunidad de Tierras Altas (a local entity comprising several municipalities that collaborate to provide joint services and undertake shared projects). In this initiative, tourists accompany the shepherds (the Pérez brothers) during their seasonal movements in the province of Soria, within the framework of a broader programme known as Caminos Trashumantes [43], a national project that documents various experiences linked to transhumant culture.

Therefore, taken as a whole, tourism has emerged as one of the most relevant strategies for the conservation and transmission of transhumant heritage. Tourism creates a space where the rising demand for authentic, traditional experiences meets the need to diversify rural economies in regions where transhumance continues to be practised [40]. However, the synergy between tourism, heritage conservation and territorial development depends on ensuring the sustainability of tourism initiatives. This requires empowering local communities—who are the true custodians of pastoral knowledge—enhancing visitors' environmental education and promoting ethical and culturally respectful tourism practices [36,44]. As the preservation of transhumance increasingly relies on its cultural heritage value rather than on its productive function [4], careful, sustainability-oriented planning becomes more necessary than ever.

These debates on transhumance as a biocultural system, ecological resource and tourism asset provide the conceptual lens through which the case of Gran Canaria is examined in the following sections.

3. Sources and Methodology

The study of contemporary transhumance in Gran Canaria was conducted through a mixed and interdisciplinary design. The approach integrates qualitative research, ethnographic fieldwork and spatial analysis to understand a socio-ecological system shaped by pastoral mobility, landscape configuration, family practices and traditional knowledge. Transhumance is conceived as a dynamic territorial practice, requiring a methodological framework capable of capturing both narrative depth and spatial materiality [45].

The research design combines perspectives from geography, anthropology and spatial planning. Central to the study is the need to foreground the voices, memories and experiences of herders, recognised as custodians of accumulated territorial knowledge (Figure 2). Ethnographic techniques—including participant observation and walking interviews [46]—were employed alongside documentary and cartographic analysis to capture the experiential and structural dimensions of pastoral mobility. This integration made it possible to construct a multilevel reading of transhumance shaped by environmental constraints, socio-historical processes and rural–urban transformations.

Data collection relied on three main sources: (1) semi-structured interviews, (2) participant observation and (3) GIS-based mapping and analysis of routes and grazing areas. Together, these sources constitute a robust triangulated corpus, consistent with qualitative and spatial methodologies applied in pastoral studies [47].

A total of 36 semi-structured interviews were conducted with active transhumant herders, representatives of cheese producers' associations and technical staff from the Government of the Canary Islands. Many of these were undertaken as walking interviews. This sample encompasses virtually the entire pastoral collective on the island. The interview guide explored life trajectories, herd management, seasonal mobility, territorial knowledge and contemporary challenges, forming the narrative backbone of the study.

The interview guide was organised into thematic blocks covering: (1) sociodemographic profile and life trajectories; (2) family structure and intergenerational transmission; (3) economic organisation of pastoral activity; (4) transhumance practices and land use; (5) livestock management and grazing areas; (6) ownership, leasing and access to pastures; (7) traditional ecological knowledge and natural heritage; (8) pastoral cultural heritage (knowledge, practices, identity); (9) relations with institutions, regulations and support schemes; and (10) perceptions of the future of transhumance in Gran Canaria. Examples of guiding questions included: "How long have you practiced transhumance and how did you learn this activity?", "How do you access transhumant pastures and under what types of agreements?", and "What changes have you observed in the territory and natural resources in recent years?" Informal conversations were conducted during field visits and participant observation and were documented in field notes.

Participant observation complemented the semi-structured interviews and was carried out between April and June 2025, coinciding with preparations for the ascent to the summer pastures. The research team attended four events linked to pastoral culture—fairs, shearing demonstrations and producers' gatherings—which facilitated access to key informants and enabled the observation of cultural expressions associated with pastoral identity. Field visits to grazing areas, corrals, springs and historic transhumance routes generated situated knowledge about the spatial organization of this system and contributed to assessing its potential as a sustainable tourism resource, together with the review of existing heritage-oriented initiatives.

The third methodological pillar was the construction of a GIS database. Routes, grazing zones and structural elements of the territory (paths, ravines, water points) were digitised using field notes, interview material, official cartography, SIGPAC (Geographic Information System for Agricultural Parcels, and Spatial Data Infrastructure of the Canary

Islands (IDECanarias) and historical orthophotographs. The result is a spatial reconstruction of the pastoral calendar and its mobility patterns.

Information processing followed two parallel paths: qualitative thematic analysis and geospatial analysis. Audio recordings were transcribed and inductively coded in three phases—open, axial and selective—following established qualitative protocols. Emerging categories included environmental change, land-use conflicts, intergenerational transmission, adaptive strategies and perceptions of territorial transformation. Field notes and audio-visual material were incorporated to enrich contextual interpretation, aligning this stratified qualitative reading with contemporary ethnographic approaches to pastoral systems and cultural landscapes.

Semi-structured interviews were audio-recorded, transcribed and analysed through thematic coding that combined deductive categories (derived from research objectives and the interview guide) with inductive categories emerging from participants' discourse. Informal conversations and field notes were treated as ethnographic material and analysed interpretively to contextualise meanings, tensions and emotions around transhumant practice. Integration was achieved through methodological triangulation: patterns identified in the coded interviews were contrasted with informal testimonies and observations to confirm, nuance or problematize emerging interpretations; in the Results, interviews underpin the main analytical axes, while informal material is used explicitly to illustrate or contextualise specific findings.

Spatial data were organised in a GIS environment to generate thematic maps illustrating annual herd mobility, seasonal grazing zones and functional infrastructures. The integration of qualitative and spatial evidence made it possible to identify convergences between herders' accounts and territorial configurations. This triangulation also revealed areas in decline, zones under pressure from urban or tourism expansion and routes at risk of abandonment.

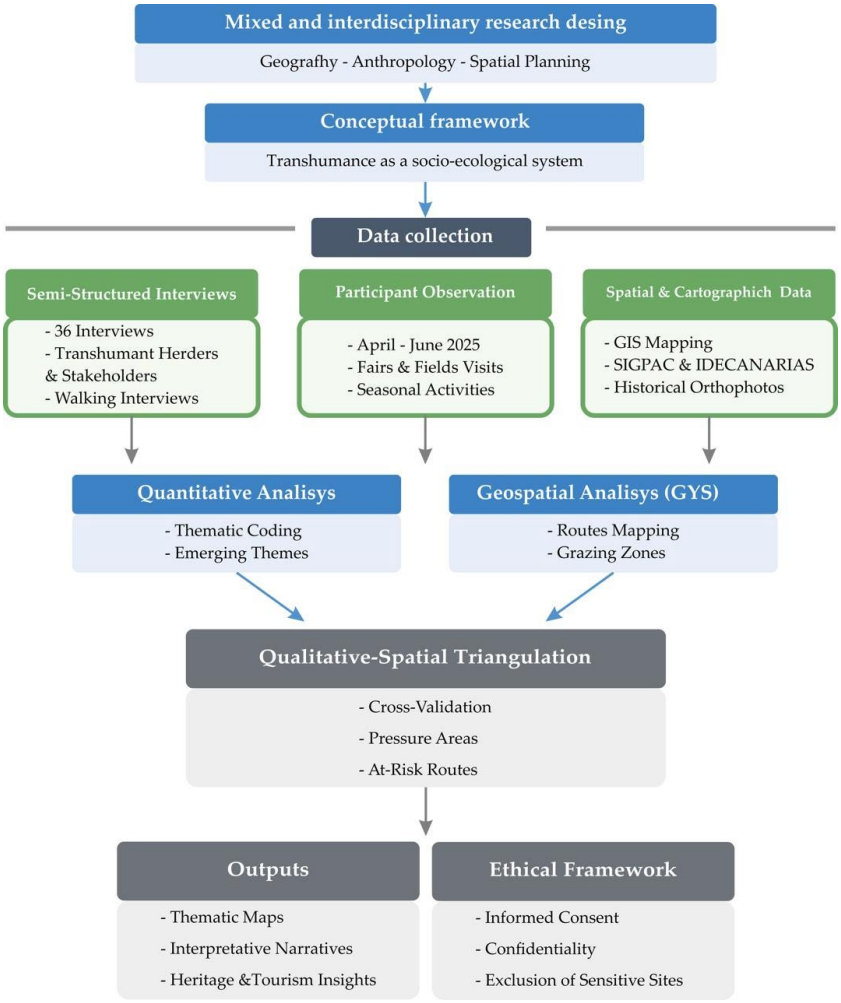

Figure 2. Methodological Framework. Source: Own elaboration.

The research adhered to ethical standards for work with rural communities and holders of traditional knowledge. All interviews were conducted with informed consent, ensuring confidentiality and voluntary participation. Sensitive geographical locations—such as private corrals or vulnerable grazing areas—were excluded from published maps to avoid compromising pastoral activity. The names of the transhumant herders used in this research do not correspond to the real names of the interviewees.

Limitations of the study stem from the small size of the pastoral community, the seasonality of the practice and the reliance on oral memory. Nevertheless, the sample covers nearly all active herders, providing an exceptional empirical basis. The integration of ethnographic and spatial methods reduces interpretive bias and strengthens the reliability of the findings.

4. Results

4.1. The Current State of Transhumance in Gran Canaria: Demographics, Economics, Routes, and Practices

In Gran Canaria, transhumance is predominantly vertical and functions as an integrated agro-pastoral system, remaining an ancestral practice that has long shaped the island's cultural and ecological landscape. At the beginning of the twenty-first century, around fifty herders still undertook the annual Mudá (term used in the Canary Islands to refer to the movements of transhumant livestock); twenty-five years later only nineteen continue to do so, while four have recently abandoned the activity [45]. This marked con-

traction illustrates the fragility of the system, a fragility further exacerbated by its precarious demographic profile: the average age of herders is sixty and, although most households include two children, few are expected to continue their parents' occupation, offering little assurance of generational renewal.

The pastoral labour is family-based and strongly gendered. Although men generally lead herd movements and seasonal stays, women sustain the household economy by managing agricultural work, caring for stabled livestock, producing cheese, handling purchases and sales, and assuming logistical responsibilities while herders are away. They also look after older or dependent relatives and young children, in addition to routine domestic work, revealing the breadth of family involvement in maintaining transhumant livelihoods.

Out of a total of 5323 animals, sheep constitute the core of transhumant herds: 4092 head, representing 76.5% of the island's extensive ovine stock. All belong to the native Canarian breed, indicating the genetic improvement pursued by herders. Goats account for 23% (1224 animals), while cattle barely persist, with just seven cows (0.1%). These latter species are kept stabled for milk production and mixed-cheese processing. Until the early twenty-first century, most herders kept cattle, but these have gradually disappeared from *gañanías* (livestock barn).

Economically, 90% of transhumant livestock herders concentrate their efforts on the artisanal production of cheese. This production system, entirely dependent on extensive grazing and spontaneous pastures—primarily located in the island's mid-altitude zones and uplands—gives rise to cheeses made from sheep's, goat's, and cow's milk, frequently blended.

The process begins with the manual milking of livestock at temporary pastoral settlements. The milk, generally obtained raw and without thermal treatment, is artisanal filtered and immediately destined for processing. Coagulation is carried out using natural rennet, traditionally of vegetal or animal origin, with dosages and timing adjusted to ambient temperature and the type of milk available. Once the curd has formed, it is manually cut to facilitate whey expulsion and placed into molds, where pressing takes place.

The resulting cheese then undergoes maturation processes carried out in caves, adjacent rooms, or ventilated spaces within the farms themselves. The seasonality of pastures and the mobility of livestock impart a marked organoleptic diversity. No two products are identical, and this diversity underpins the high prestige enjoyed by cheeses from Gran Canaria.

Most transhumant households reside in the medianías, the mid-altitude uplands of the northern and eastern sectors of the island, the most favourable lands owing to higher humidity, milder temperatures than along the coast, and the presence of springs and water sources controlled by subsurface hydrogeology. The main grasslands are located around these settlements. Their intermediate position facilitates a wide range of agro-silvo-pastoral activities from the shoreline to the summits (Figure 3).

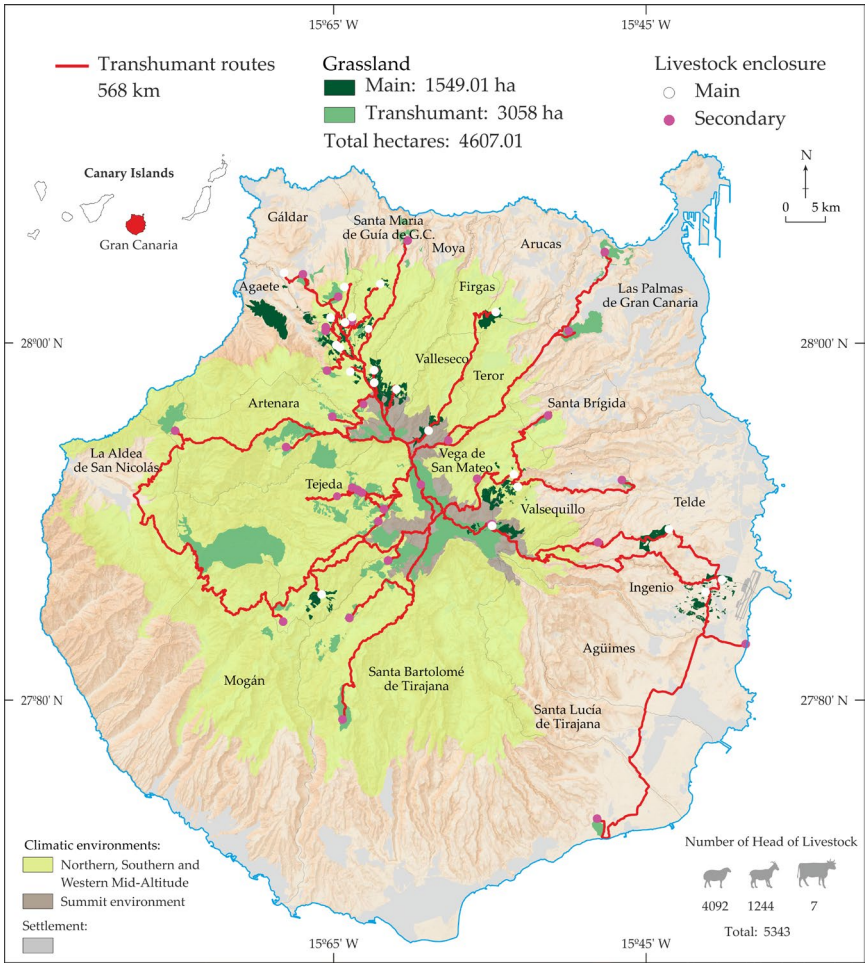

Figure 3. Transhumance data in Gran Canaria and their territorial expression. Source: Own elaboration. Base map derived from GRAFCAN.

The surface area of transhumant pastures is double that of the main pastures near homesteads, most of which are located in the highland areas of the island, on both the windward and leeward slopes. This underscores the importance of mobility for accessing natural forage resources and for the ecological management of the territory. The majority of herders own their primary grazing lands but do not hold ownership over transhumant pasture. Instead, they pay rents to the owners of the parcels they graze, leasing them for the duration of the transhumance period.

The connection between the main livestock enclosure, the secondary settlements (the place where herders reside during transhumance) and the transhumant grazing areas is established through a spatial infrastructure of routes that sustain these movements, extending for approximately 568 km. Together, they form a network of twenty-first-century pastoral paths that represents only a fraction of a more extensive system that once traversed the island.

Herders generally remain at their family base for most of the year, undertaking two main types of movement: short-range trips lasting no more than fifteen days and covering a radius of three to five kilometres, and long-range movements of two to three months to any area of the island with sufficient pasture between July and October. On average, each herder walks about twenty-eight kilometres along these routes. They are round-trip paths with an average width of seven to eight metres on primary routes and four to five metres on secondary ones.

At present, 70% of traditional pastoral routes have been converted into roads, and the overall condition of the remaining paths is poor. Some have benefited from restoration

initiatives linked to projects unrelated to pastoralism, such as the Insular Plan for Tourist Trails, which repurposed these routes as corridors connecting different areas of interest. Others are maintained solely through everyday use, without formal conservation work, and many older routes survive only in the memories of veteran herders. The importance of these pathways lies not only in the numbers of animals that once traversed them but also in the pastoral and wayfaring heritage they embody, as material testimonies to long-standing interactions between mobility, landscape and rural culture.

The functioning of transhumance or long-range movements on the island is structured around seasonal cycles designed to compensate for climatic variability and environmental constraints. Eight territorial and seasonal typologies characterise current mobility patterns, which are most strongly expressed in the mountainous and mid-altitude northern and eastern sectors through vertical movements (Figure 4).

One of the most illustrative cases is that of Orlando (interviewed transhumant herder; pseudonym), among the herders who cover the longest distances—approximately 110 km—with his more than 500 sheep. Although his strategy varies according to resource availability, one of its forms is the winter transhumance from mid-slope areas to the summits (number 5 in Figure 4). Flocks settled on the humid northern mid-slopes ascend in December and January to south-facing summit zones where grasses sprout earlier than in their colder habitual pastures. As he explains, "First thing is to see if there is food. The date that has always been for the winter one is Pascua, between Pascua and Reyes. If you go out earlier because it has rained more, then you suffer a lot because there are many lambs and the lambs do not walk for you, and the sheep goes forward and then goes back to look for the young, and there are revolutions on the way so you take longer to arrive. After Reyes the lambs are already taken out and the herd is lighter".

4.2. Environmental and Cultural Contributions of Transhumance

Transhumance in Gran Canaria represents a paradigmatic form of sustainable land management in which herders act as regulators of ecological balance and custodians of a highly valuable intangible cultural heritage. Transhumant pastoralism preserves a wide body of traditional ecological knowledge transmitted across generations and grounded in long-term observation of the environment and empirical experience.

On Gran Canaria, the environmental contributions of transhumance are considerable. Some studies have demonstrated its role in landscape conservation and biodiversity maintenance [48]. Seasonal livestock mobility helps sustain semi-natural landscapes with high ecological heterogeneity, which are essential for a wide range of plant and animal species. By preventing overgrazing and promoting the rotational use of pastures, herders maintain a dynamic mosaic of biotopes and contribute to the creation of island-scale biological corridors that reduce the isolation of protected natural areas.

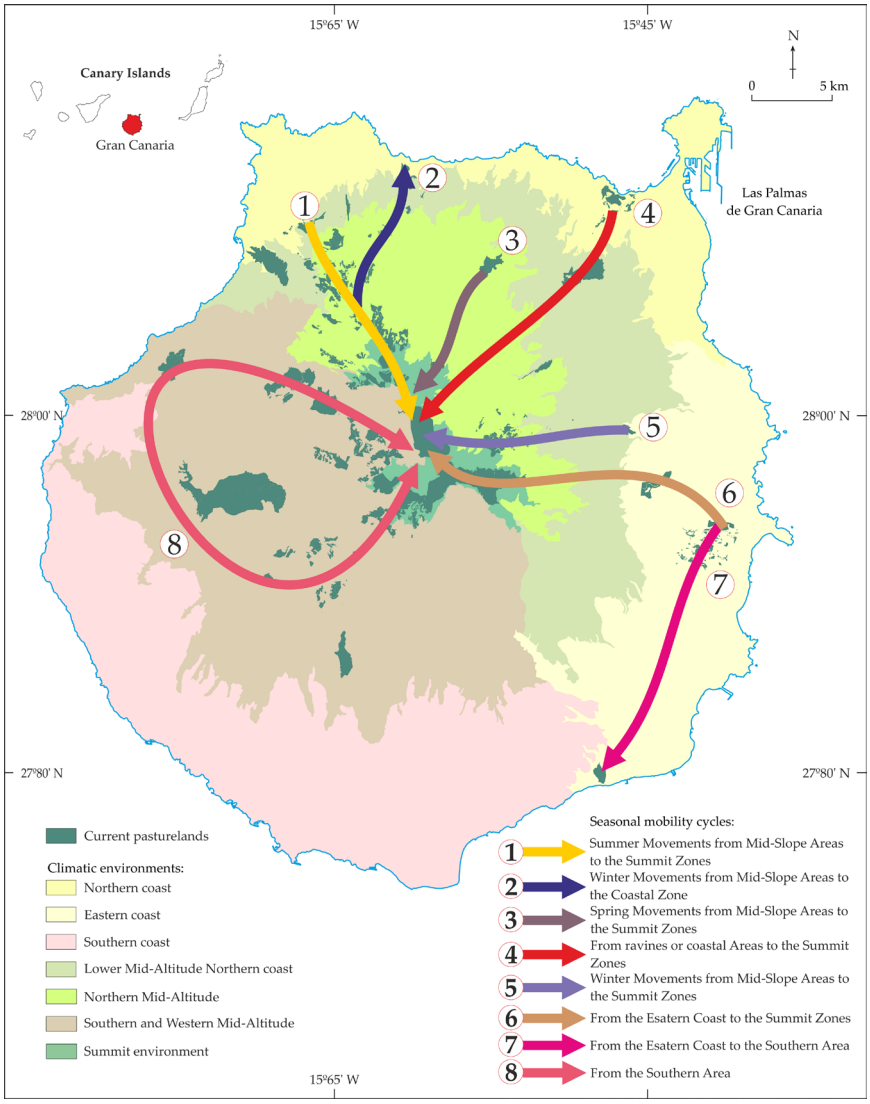

Figure 4. Seasonal mobility cycles. Source: Own elaboration. Base map derived from GRAFCAN.

Transhumant grazing also performs key functions in risk reduction and soil management. The consumption of herbaceous and shrubby biomass by livestock significantly lowers fuel loads in forest and scrubland areas, thereby helping to reduce the risk and potential intensity of wildfires. At the same time, natural fertilisation through manure closes the agro-ecological cycle by increasing soil organic matter and enhancing water retention. The temporary use of mobile corrals on specific plots favours a more even distribution of nutrients and can improve soil structure. In addition, livestock-mediated seed dispersal supports vegetation regeneration and strengthens ecological connectivity, while natural pest control and the prevention of soil erosion emerge as further benefits of well-managed extensive grazing systems on the island.

Herders apply management strategies that reveal a sophisticated agro-ecological understanding. The temporal rotation of grazing areas and the careful management of water resources through aljibes (cisterns) and watering points exemplify a form of circular production aligned with local resource availability. Corrals built from dry-stone masonry provide shelter and protection from adverse weather, while collaboration among herders during shearing or agricultural tasks reinforces the communal dimension of pastoral life. Even the use of livestock bells (cencerras), marks and reproductive controls reflects an adaptive rationality aimed at optimising herd management and maintaining the ecologi-

cal integrity of the system. Together, these practices illustrate how Gran Canarian transhumance functions as an ancestral model of sustainability integrating economic, ecological and cultural values (Figure 5).

Figure 5. Shepherds and livestock along a transhumant route in the highlands of Gran Canaria. Source: The photograph was taken by Javier Gil.

Alongside its environmental dimension, transhumance embodies an extraordinarily rich intangible cultural heritage. Its practice weaves together knowledge, rituals and orally transmitted symbols that express a worldview based on reciprocity between humans and the natural environment. Pastoral culture is articulated through specialised vocabulary, tools, place names and everyday practices that structure community life. The lexicon of herders—terms such as baifo (small lamb), goro (small corral), majada (nighttime enclosure for the livestock), vuelta (livestock parcel) or gambuesa (large dry-stone livestock corral)—constitutes a linguistic reservoir of pre-Hispanic and rural origin that preserves territorial memory. Traditional tools including the garrotte (shepherd's staff), zurrón (goatskin bag), empleita (a cheese mould used in traditional cheese-making) or cencerra (livestock bell) function as extensions of the pastoral body and craft, imbued with symbolic and identity value. The shepherd dog, an inseparable companion of the herd, and the metallic sound of the cencerras contribute to a sensory dimension that reinforces the bond between herder and landscape. This "soundscape" not only allows herders to locate their animals but also symbolises professional pride: well-tuned bells distinguish experienced shepherds capable of caring for and guiding their flocks.

Material and immaterial pastoral culture thus acts as a bridge between past and present, enabling the continuity of a way of life that has shaped the rural landscapes of Gran Canaria. Place names associated with pastoralism—Cortijo, Vuelta, Goro, Corral—bear geographical witness to a long-standing human occupation that intertwines technical knowledge and territorial belonging. This cultural legacy constructs an identity-laden landscape that transcends economic value and is embedded in the island's collective memory.

Equally significant are the voices of herders themselves, which constitute ethnographic testimonies essential for understanding the human dimension of pastoralism.

Pedro Medina (pseudonym) explains that "the first calendar for the return we mark it ourselves when we put the rams with the ewes… because if we put them on 25 May we know that on 25 October we have to go back home," highlighting the synchronization between herd reproductive cycles and natural rhythms. Carlos Guedes (pseudonym) notes that displacement "also depends on the food there is and on the weather helping us," illustrating the system's flexibility and adaptive capacity in response to weather and forage conditions. Antonio Jiménez (pseudonym), reflecting on the environmental function of herds, observes that "the sheep clean under the prickly pears, they chase away the rabbits…," underscoring the role of grazing in controlling vegetation and fauna.

These testimonies articulate memory, ecological knowledge and collective identity, revealing an emotional and ethical relationship with the landscape rooted in observation, respect and reciprocity. The words of the herders reflect a system in which cultural continuity and environmental stewardship are inseparable, and in which the knowledge embedded in daily practice constitutes a form of heritage transmission as important as any material element.

4.3. Threats and Vulnerabilities: Aging, Land Fragmentation, Urban and Tourism Pressure, and Institutional Neglect

Current data on transhumance in Gran Canaria present a discouraging picture. The activity has undergone a pronounced decline in recent decades, driven by structural, demographic, territorial and institutional factors. These pressures form an interdependent web that weakens the resilience of a sector whose continuity depends on inherently fragile socio-ecological dynamics.

One of the most critical vulnerabilities is the ageing of the pastoral population and the absence of generational renewal. Most transhumant herders are over fifty-five, and cases of young people entering the profession are extremely rare. This situation reflects a combination of causes: the physical demands of the work, long daily hours, economic uncertainty, limited institutional support and a pervasive lack of social recognition. Among younger generations, herding is widely perceived as an unattractive occupation, offering few opportunities for economic improvement or diversification. The absence of successors accelerates the loss of traditional ecological knowledge, skills linked to extensive herd management and an intimate understanding of the natural environment. It also jeopardises the continuity of routes whose maintenance relies directly on the active practice of herders.

Territorial fragmentation represents a second major threat. The agrarian structure of Gran Canaria is characterised by extreme parcel fragmentation and dispersed ownership, particularly in the mid-altitude and highland areas where pastoralism is concentrated. The absence of land consolidation and the complexity of property rights hinder the extensive use of space and the movement of flocks across the landscape. This problem is compounded by the abandonment of agricultural and pastoral land, especially in the medianías, where the replacement of traditional farmland by scrub and secondary pine forest reduces the availability of natural pastures.

Urban and tourism pressure further intensifies the pastoral crisis. Although urban and tourism development is concentrated along the coast, its gradual expansion into the interior of the island has resulted in physical fragmentation of the territory. Dispersed urbanization, the proliferation of tourist accommodation on rural land and the construction of infrastructures interrupt traditional transhumant routes, breaking the continuity of corridors that once allowed free movement of flocks. These interruptions force herders to take longer detours or to transport livestock in vehicles, increasing costs and reducing the ecological and cultural value of mobility. In protected natural areas, pastoralism is

often mistakenly perceived as incompatible with conservation, despite its documented environmental benefits.

Socioeconomic transformations have also eroded the profitability of pastoralism. Competition from industrial livestock production, fluctuations in the price of milk and meat and, more recently, rising input costs make maintaining a transhumant herd increasingly difficult. Expenses associated with transport, supplementary feeding, compliance with sanitary regulations and the management of administrative requirements frequently exceed the income generated. The lack of specific economic incentives and public policies that recognise the multifunctional value of pastoralism exacerbates this situation. As a result, many livestock farmers opt for partial or total stabling, reducing seasonal mobility and undermining the genuinely transhumant character of the system.

Administrative and institutional burdens constitute another significant vulnerability. Regulatory demands related to animal health, environmental protection and welfare standards—though necessary—are particularly difficult for small, family-run operations with limited financial and technical capacity. Herders repeatedly highlight the excessive bureaucratization of the sector, which absorbs time and resources that could otherwise be dedicated to herd management, pasture monitoring or the transmission of traditional skills.

Environmental and climatic vulnerability adds a further layer of complexity. Climate change has introduced new uncertainties into pastoral systems, with irregular rainfall patterns, rising temperatures and prolonged drought periods reducing the productivity of natural pastures. Herders increasingly rely on purchased fodder or marginal grazing areas, driving up production costs and disrupting traditional mobility cycles. These changes destabilise the ecological rhythms that have historically guided herd movements and threaten the long-term sustainability of the system.

The pastoral crisis also has an important cultural dimension. Contemporary Canarian society is increasingly disconnected from rural life, leading to a loss of recognition of the historical contribution of herders to the shaping of the island's landscapes. Values historically associated with pastoralism—effort, autonomy, territorial knowledge and environmental stewardship—have been overshadowed by stigmatising or folklorised representations. This symbolic devaluation weakens intergenerational transmission of pastoral identity and limits the emergence of community-led or tourism-related initiatives that could contribute to revitalising the practice.

Taken together, the threats affecting transhumance in Gran Canaria cannot be understood in isolation. Ageing, the lack of generational replacement, land fragmentation, abandonment of agricultural land, urban and tourism pressure, economic fragility, administrative burdens and climate change reinforce one another in a cumulative process of decline. Without targeted interventions that address the full spectrum of vulnerabilities, the island risks losing not only a productive system but also a unique biocultural heritage deeply embedded in its landscapes and collective memory.

4.4. Tourism as a Solution: Potential for Sustainable and Experiential Tourism and Current Practices

The dynamics outlined above show that, despite its acute structural fragility, Gran Canarian transhumance continues to persist thanks to the adaptive capacity of what has been described as a "resilient society by definition" [45] (p. 143). Within this context of vulnerability, new initiatives are emerging that, although insufficient to overcome the system's structural weaknesses in isolation, open up fresh possibilities. This resilience is evident in herders' ability to adjust their practices to changing socioeconomic conditions and to engage with emerging markets, supported both by institutional initiatives and by bottom-up processes rooted in local communities. At the same time, the growing recognition

of transhumance as cultural heritage is creating opportunities for its valorisation through sustainable and experiential forms of tourism.

Several initiatives already operating on the island illustrate how cultural and nature-based tourism can contribute to the enhancement of pastoral heritage (Table 1). Among the most consolidated are those centred on local products derived from transhumant livestock farming, particularly artisanal cheese. The PROQUENOR Association (Asociación de Productores de Queso Artesanal del Noroeste) [49], created in 1998 to secure the Protected Designation of Origin for Queso de Flor de Guía, has become a key factor in this field (The Queso de Flor de Guía takes its name from the use of a vegetable rennet, obtained from the infusion of thistle flower pistils, and from the name of the municipality of Guía in the north of the island, a place historically dedicated to breeding). Its headquarters, the Casa del Queso (Cheese House), functions as a cultural and commercial hub offering guided tours, workshops and tastings, serving simultaneously as a venue for promoting local products and as an interpretive centre for the rural heritage of the island's northern regions. Parallel to this, the revitalization of wool-related practices has gained visibility through events such as the Fiesta de la Lana (Wool Festival) in Caideros, celebrated every 30 May since 1994 [44]. This event re-enacts the communal shearing sessions traditionally held between May and June, transmitting knowledge of pastoral techniques and local craftsmanship.

Experiential tourism initiatives also extend to the transhumant activity itself. The willingness of herders to share their work makes it possible to organise participatory transhumance journeys in which tourists, residents and even relatives or friends of herders walk alongside the flocks, observing pastoral techniques at close range. These activities forge direct connections with the cultural landscape and enable visitors to experience an embodied understanding of pastoral mobility and seasonal rhythms.

In addition to these activities directly linked to pastoralism, other forms of tourism draw upon the infrastructural legacy of transhumance. The island's network of traditional paths (vías pecuarias), partially restored through programmes for the development of tourist trails, provides an ideal setting for experiential and sports tourism such as trekking, hiking and biking. Their use for recreational purposes has the potential to reinforce the conservation of these historic pathways, many of which remain in precarious condition [50] (p. 89). By positioning these routes as multifunctional recreational corridors, tourism can strengthen the visibility of pastoral heritage while contributing to the maintenance of the physical structures that sustain mobility.

Table 1. Transhumance-related heritage and tourism practices in Gran Canaria: actors, heritage dimensions, contributions and constraints.

Practice/Initiative	Main Actors	Heritage Dimension	Visitor Involvement	Potential Contribution	Main Constraints/Needs
Product-based experiences (artisanal cheese; Casa del Queso)	Cheesemakers, associations, local venues/institutions	Food heritage; pastoral know-how	Medium–high	Visibility; complementary income; interpretation	Coordination/marketing; risk of "product-only" framing
Cultural events (Fiesta de la Lana, Caideros)	Community, herders, municipalities	Craft heritage (wool); communal practices	Medium–high	Public recognition; transmission; local support	Seasonal/episodic; organisational capacity
Participatory transhumance walks (walking with flocks)	Herders, visitors, residents	Mobility heritage; embodied knowledge	High	Strong experiential value; support networks	Safety/animal welfare protocols; time burden; capacity limits

Route-based nature/sports use of drove roads (*vías pecuarias*)	Administrations, trail users, communities	Drove-road heritage; landscape legibility	Medium (self-guided)/high (guided)	Justifies maintenance; increases visibility	Path deterioration; user conflicts; signage/maintenance/regulation
Integrated "heritage landscape" approach (linking routes, products, sites)	Cabildo/municipalities, herders, tourism bodies	Transhumance as socio-ecological system	Variable	Systemic framing; aligns tourism with continuity	Need for strategy, coordination, long-term planning

Source: Own elaboration based on fieldwork (semi-structured interviews, informal conversations and participant observation), 2025.

Taken together, these initiatives demonstrate that the valorisation of transhumance in Gran Canaria has begun, yet remains only partially developed when compared with other national and international contexts that have more clearly articulated tourism strategies around pastoral culture. The island possesses fundamental assets already in place: a network of routes traversing natural areas, scenic viewpoints and points of cultural interest; active cheese producers and artisans whose work is deeply rooted in pastoral traditions; and an emerging set of cultural initiatives that foreground local products and knowledge. What is still lacking is a systemic vision capable of integrating these elements into a coherent tourism model that reflects the holistic nature of transhumance itself [11], conceived not merely as an economic resource but as an interlinked ecological, cultural and territorial system.

5. Discussion

5.1. Transhumance as a Living Heritage: Between Conservation and Extinction

The case of Gran Canaria confirms many of the patterns identified in the wider literature on Mediterranean and Atlantic transhumance, while simultaneously revealing a set of insular specificities that place this pastoral system in an acutely fragile situation. As in Spain, Italy or Greece, Gran Canaria's transhumance constitutes a biocultural system in which seasonal herd mobility, extensive grazing and family-based labour have historically shaped complex cultural landscapes and high ecological connectivity. The vertical movements between medianías and summits, the dense network of paths and corrals, and the role of herders as custodians of traditional ecological knowledge closely mirror the socio-ecological configurations described for Iberian dehesas, Alpine pastures or the Atlas Mountains. In this sense, the island fits fully within the spectrum of transhumant landscapes, sharing key ecological functions such as fire prevention, seed dispersal and biodiversity maintenance.

Comparable dynamics have also been documented for short-distance (often vertical) transhumance and summer-farming systems in the Alps and in Nordic/Scandinavian regions, where herd mobility is embedded in a broader household economy, including seasonal settlement, dairy processing and the upkeep of pastoral infrastructures. A comparative study of transhumance landscapes in Forollhogna (Norway) and Asturias (Spain) shows that, despite different institutional contexts, farmers articulate similar motivations and value orientations around maintaining these cultural landscapes, while facing restructuring pressures and regulatory constraints that sharpen the tension between conservation and abandonment [51]. Bringing this literature into the discussion helps situate Gran Canaria as an insular variant of a wider European mountain pastoral heritage, and clarifies what is specific—rather than exceptional—about the island case.

Yet the Gran Canarian system also displays distinctive features arising from its insular condition and from the very small scale at which it now operates. Rather than a broad pastoral region, Gran Canaria is characterised by a reduced number of herders, a highly

circumscribed set of routes and a strong dependence on family labour that, as Section 4.3 shows, is exposed to intense demographic and territorial pressures. In an island context, these constraints acquire a specifically insular character: mobility is confined within a closed territorial system, with no possibility of relocating herds to distant valleys or alternative grazing regions when corridors are lost. Ageing, land-use competition and the physical fragmentation of pastoral routes thus converge more rapidly and leave little room for reorganisation or expansion. The fact that Gran Canaria hosts the only active insular transhumant system in the Spanish context further amplifies this vulnerability, since the disappearance of a few holdings would entail not only local decline but the extinction of a distinct insular modality of transhumance within the broader Mediterranean–Atlantic mosaic.

The ecological and cultural contributions identified in Section 4.2 acquire particular significance under these conditions. The reliance on the native Canarian sheep breed, the centrality of artisan cheese production and the dense web of practices, vocabularies, soundscapes and place names linked to pastoral mobility illustrate how a relatively small pastoral community can sustain a disproportionately rich biocultural heritage. At the same time, the concentration of these functions in a limited number of holdings produces a biocultural bottleneck: the loss of even a few herders would entail not only a productive decline but also the abrupt erosion of knowledge, routes and cultural landscapes. The insular setting accelerates this process, as the degradation or urbanisation of a single corridor may simultaneously undermine the material infrastructure of mobility and the intangible heritage anchored to that space.

These dynamics have direct implications for the reproduction of knowledge. In many continental transhumant systems, the sheer number of herders and the existence of multiple pastoral regions allow traditional ecological knowledge to be transmitted largely through everyday practice and intergenerational cohabitation, even in contexts of decline. By contrast, in Gran Canaria the reduced size of the pastoral community, the advanced ageing of herders and the shrinking of available space mean that such tacit reproduction is no longer sufficient. Ensuring continuity increasingly depends on explicit and planned mechanisms of transmission—shepherding schools, intergenerational mentorship, oral and audiovisual archives, and educational initiatives—that can safeguard and disseminate knowledge beyond the narrow circle of pastoral families. In this sense, the island exemplifies how insular vulnerability can force a transition from implicit to institutionalised modes of knowledge reproduction.

Taken together, these elements position Gran Canarian transhumance as both representative and exceptional. It is representative because it condenses, within a limited insular space, the biocultural logics and ecological functions documented for transhumant systems across Europe and the Mediterranean. It is exceptional because it constitutes a critical case of living heritage in an advanced phase of contraction, where continuity depends on a handful of highly resilient households and on targeted public intervention. The system thus exemplifies the tension "between conservation and extinction", showing how transhumance can still operate as a robust biocultural model while simultaneously standing on the threshold of disappearance. As such, it can be understood as a "critical laboratory" of biocultural vulnerability, offering insights that may help anticipate and address similar scenarios in other pastoral landscapes, particularly in island and marginal Mediterranean regions.

5.2. Potential for Sustainable and Experiential Tourism

Building on the previous analysis, Gran Canaria emerges as a key setting for exploring how transhumance can be linked to sustainable and experiential forms of tourism in

an insular context. The presence of a living transhumant system, together with a consolidated tourism sector, creates particularly favourable conditions for developing proposals that go beyond conventional hiking or generic nature-based activities and instead offer direct, participatory experiences. The island's tourist offer already includes some initiatives previously described. These indicate a clear potential for transhumance to serve as an anchor for experiential and heritage-based tourism.

Realising this potential, however, requires coherent tourism planning that links currently scattered initiatives into an integrated and territorially sensitive network. Rather than isolated events or products, transhumance-based tourism should be structured around connected circuits that combine visits to herders and cheese dairies, participation in seasonal movements, interpretation of landscapes and engagement with local cultural practices. In practical terms, this includes restoring degraded paths, designing interpretive signage along transhumant routes, coordinating thematic events involving local communities and schools, and establishing points of sale along routes to strengthen the economic viability of artisan dairy production (Figure 6). If implemented within a broader strategy for rural development and protected-area management, such measures could not only diversify the tourist offer but also redistribute visitor flows toward inland areas, helping alleviate overtourism in urban and coastal zones.

Figure 6. Cheese-making workshops at the *Casa del Queso*. Source: The photograph was taken by Claudio Moreno.

Nevertheless, tourism cannot be assumed to be a straightforward tool for conserving transhumance. Poorly regulated tourism may generate land-use conflicts, intensify pressures on already fragile routes and grazing areas, and erode cultural authenticity through processes of spectacularisation or commodification [52]. Increased activity along degraded or narrow paths can compromise livestock mobility [35], and the transformation of transhumant practices into mere performances risks undermining the very knowledge and relationships that give them meaning. Moreover, involving herders in tourism entails additional labour demands that must remain compatible with family-based work rhythms and with the seasonal calendar of flock management, and that require adequate economic compensation and institutional support [40].

For these reasons, the valorisation of transhumant heritage through tourism must be embedded within broader strategies aimed at reinforcing the structural conditions that

sustain pastoral livelihoods. Rather than reiterating the detailed diagnosis already presented in Section 4.3, it is sufficient to underline that addressing the structural issues identified through interviews—administrative and regulatory constraints, limited political recognition, insufficient financial support and difficulties in accessing and maintaining grazing land—is indispensable if tourism is to contribute effectively to the continuity of transhumance. By improving pastoral infrastructures, balancing recreational and livestock uses of space and ensuring fair remuneration for herders' participation in tourism, public policies can help safeguard a living and authentic pastoral system. Only under such conditions can sustainable tourism contribute meaningfully to both the conservation of transhumant heritage and the more balanced territorial distribution of tourism on the island, as identified by Belliggiano et al. [36].

5.3. Policy Implications for Island Territories and Cultural Landscape Management

The case of Gran Canaria offers important insights for policy design in island territories, where pastoral systems operate under spatial, demographic and economic constraints that sharpen the vulnerabilities observed in continental transhumant regions. The findings discussed above show that the preservation of transhumance requires governance frameworks capable of integrating cultural heritage, environmental management and rural livelihoods within a unified territorial vision. For island landscapes, this recognition carries specific policy implications that can be summarised in several complementary lines of action.

A first implication concerns the need to formally embed transhumance within environmental and landscape planning, drawing on the ecological functions documented in Section 4.2. Incorporating herding routes into green infrastructure planning, protecting access to water points and ensuring the legal continuity of traditional paths would therefore strengthen the role of pastoralism as a nature-based land-management tool in island settings.

Secondly, the growing interest in experiential and heritage-based tourism, observed in Gran Canaria and in European initiatives such as La Routo [36], offers opportunities but also demands safeguards. Policy frameworks should therefore prioritise pastoral needs when designing recreational infrastructures, restore degraded pathways with livestock mobility in mind and provide clear guidelines regarding visitor behaviour along grazing areas, while guaranteeing fair remuneration and institutional support when herders participate in tourism activities [35,40].

A third implication relates to the structural vulnerabilities affecting pastoral viability, already detailed in Section 4.3. The policy interventions must simplify administrative procedures for small-scale extensive producers, create financial mechanisms that reward the ecosystem services provided by transhumance, and boost specific support for artisan cheese production, which in Gran Canaria constitutes a central pillar of pastoral economies. Such measures would align with calls for enhancing the multifunctionality of pastoral systems and their contribution to sustainable rural development [32,34].

Finally, the insular context highlights the urgency of governance models that bring together herders, conservation agencies, tourism institutions and local authorities in stable, co-managed arenas. Fragmented policy approaches are insufficient for systems whose resilience relies on the interplay of ecological, cultural and social dimensions. As reflected in the interviews with Gran Canarian herders, continuity depends not only on material conditions but also on social recognition and political support. Strengthening dialogue, participatory planning and co-management mechanisms would help ensure that policy measures effectively respond to pastoral needs while contributing to broader territorial objectives.

6. Conclusions

This article has examined contemporary transhumance in Gran Canaria as a living biocultural system and as a singular example of insular pastoralism within the wider Mediterranean and Atlantic contexts. Addressing the first research question, the findings show that, despite its reduced scale, transhumance continues to play a pivotal role in preserving the island's biocultural heritage. Seasonal herd mobility sustains key ecological functions—such as ecological connectivity, fuel load reduction and agrobiodiversity—while also maintaining an assemblage of practices, vocabularies, soundscapes and place names that anchor collective memory in the landscape. In this sense, Gran Canarian transhumance exemplifies how living pastoral practices can function simultaneously as an ecological management tool and as an engine of cultural continuity.

At the same time, the study confirms that this biocultural system operates under acute structural vulnerability, thus fulfilling the second objective. A small, ageing pastoral community, limited generational renewal, fragmented land ownership, territorial and tourism pressures and institutional and climatic uncertainties combine to produce what can be described as an insular biocultural bottleneck. The insular setting heightens this fragility: spatial closure, scarce alternative routes and intense competition for land reduce the scope for adaptation and concentrate heritage and knowledge in a very small number of households. In comparative terms, this positions Gran Canaria as a critical case among Mediterranean transhumant systems—a living heritage that condenses long historical trajectories while standing close to the threshold of extinction.

The third objective, related to tourism and rural development, highlights that experiential and heritage-based tourism can contribute to transhumance conservation but cannot substitute the material conditions that sustain pastoral livelihoods. The case of Gran Canaria illustrates that tourism may support the continuity of pastoralism when it is explicitly grounded in existing practices, recognises herders as central actors and is framed within broader strategies for rural development, environmental management and education. Under such conditions, transhumance-based tourism can help diversify local economies, redistribute visitor flows and strengthen public recognition of pastoral work, responding to the second research question.

Beyond the specificities of Gran Canaria, the study offers broader lessons for island territories and marginal pastoral regions. First, it underscores the need to integrate transhumance into territorial and environmental governance as a nature-based solution that aligns biodiversity conservation, climate resilience and cultural heritage. Second, it shows that in highly constrained contexts, the reproduction of pastoral knowledge increasingly depends on deliberate, institutionalised mechanisms—such as training, documentation and intergenerational programmes—rather than solely on tacit everyday learning. Finally, conceptualising Gran Canarian transhumance as a "critical laboratory" of biocultural vulnerability invites comparative research on other insular and mountain systems, with a view to understanding how traditional pastoral practices can inform contemporary debates on sustainable land management, heritage conservation and rural futures in the Mediterranean and beyond.

Author Contributions: C.M.-M., J.M.P.-C., I.G., J.G.-L.: Methodology, Formal Analysis, Writing—original draft. C.M.-M., I.G., J.G.-L.: Investigation, Data Curation. C.M.-M., J.M.P.-C.: Conceptualization, Supervision. C.M.-M., J.G.-L.: Visualization. C.M.-M.: Funding acquisition, Project administration. All authors have read and agreed to the published version of the manuscript.

Funding: This work has been carried out within the framework of a contract for a Technical Report awarded by the Historical Heritage Service of the Department of the Presidency and Sustainable Mobility of the Gran Canaria Island Council to the University Foundation of Las Palmas, under the

title Historical documentation, oral compilation and mapping of Transhumance in Gran Canaria. Reference CT—07/01—240/097/082.

Data Availability Statement: The data used to support the findings of this study are available from the corresponding author upon request.

Acknowledgments: The authors extend their sincere gratitude to the transhumant herders of Gran Canaria for their generous collaboration throughout this research. Their willingness to share knowledge, open their pastoral landscapes to inquiry, and engage thoughtfully with the study has been indispensable to the development of this article. We also acknowledge their enduring commitment to safeguarding the island's natural and cultural heritage, whose continuity relies profoundly on their daily practices, stewardship, and intergenerational transmission of traditional pastoral knowledge.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Sraïri, M.T.; Tourrand, J.F.; Chedid, M.; Opplert, M.; Maraval, M.C. *Past, Present and Future Challenges in Mountain Transhumance*; CIRAD: Montpellier, France, 2025. https//doi.org/10.19182/agritrop/00231.
2. UNESCO. Decision of the Intergovernmental Committee: 14.COM 10.B.2. 2019. Available online: https://ich.unesco.org/en/decisions/14.COM/10.B.2 (accessed on 1 September 2025).
3. Bindi, L. (Ed.) *Grazing Communities (Open Access)*; Berghahn Books: Oxford, UK, 2023. Available online: https://www.berghahnbooks.com/downloads/OpenAccess/BindiGrazing/9781800736672_OA.pdf (accessed on 15 December 2025).
4. Schmitz, M.-F.; Arnaiz-Schmitz, C.; Pineda, F. Paisajes de la trashumancia y turismo de naturaleza. Una oportunidad para la conservación y el desarrollo sostenible. *Ambienta* **2023**, *132*, 49–53.
5. Oteros-Rozas, E.; Ontillera-Sánchez, R.; Sanosa, E.; Gómez-Baggethun, E.; Reyes-García, V.; González, J.A. Traditional ecological knowledge among transhumant pastoralists in Spain. *Ecol. Soc.* **2013**, *18*, 33. https://doi.org/10.5751/ES-05597-180333.
6. Manzano, P.; Casas, R. Past, present and future of transhumance in Spain: Nomadism in a developed country. *Pastoralism* **2010**, *1*, 72–90. https://doi.org/10.6084/m9.figshare.12253130.v1.
7. Mastronardi, L.; Cavallo, A.; Romagnoli, L. A new governance model for the conservation and enhancement of Italian ancient transhumance routes. *J. Environ. Manag.* **2023**, *341*, 118086. https://doi.org/10.1016/j.jenvman.2023.118086.
8. Tzortzi, J.N.; Theodoridou, S.; Koukosoula, S. Reviving the practices of transhumance in a forgotten settlement in mainland Greece. *Heritage* **2024**, *7*, 5932–5962. https://doi.org/10.3390/heritage7100278.
9. Fernández-Giménez, M.E.; García-Romero, E. 'Ilemchane Transhumant Pastoralists' Traditional Ecological Knowledge and Adaptive Strategies. *Mt. Res. Dev.* **2021**, *41*, R61–R73. https://doi.org/10.1659/MRD-JOURNAL-D-21-00028.1.
10. Rodríguez Pérez-Galdós, A. *La Ganadería y la Trashumancia en Gran Canaria*; Cabildo Insular de Gran Canaria: Las Palmas de Gran Canaria, Spain, 1993.
11. Moreno-Medina, C.; Gil-León, J.; Parreño-Castellano, J.M.; Quintana Andrés, P. La trashumancia en Gran Canaria: Patrimonio cultural y territorio. *Vegueta Anu. De La Fac. De Geogr. E Hist.* **2024**, *24*, 847–875. https://doi.org/10.51349/veg.2024.2.10.
12. Alberti, G.; Grima, R.; Vella, N.C.; Xerri, K.; Zammit, D.E. A Historical Landscape under Threat: Contestation and Preservation of Malta's Pastoral Droveways. *Heritage* **2024**, *7*, 3095–3119. https://doi.org/10.3390/heritage7060146.
13. Sabaté Bel, F. Aproximación a la trashumancia como elemento de articulación territorial en Canarias. In *La trashumancia y el pastoreo en Canarias*; Dirección General de Patrimonio Cultural de la Consejería de Educación, Universidades, Cultura y Deportes del Gobierno de Canarias: Tenerife, Spain, 2022; pp. 13–42. ISBN: 978-84-7947-833-9.
14. Lauber, S.; Herzog, F.; Seidl, I.; Böni, R.; Bürgi, M.; Gmür, P.; Hofer, G.; Mann, S.; Raaflaub, M.; Schick, M.; et al. Zukunft der Schweizer Alpwirtschaft: Fakten, Analysen und Denkanstösse aus dem Forschungsprogramm AlpFUTUR; Eidg. Forschungsanstalt WSL: Birmensdorf, Switzerland, 2013; Forschungsanstalt Agroscope Reckenholz-Tänikon ART. ISBN 978-3-905621-55-6.
15. Svensson, E.S.; Pettersson, S.P.; Johansson, A.J. Kårebolssätern and other shielings—The emergence and development of Swedish transhumant pastoralism. *Pastor. Res. Policy Pract.* **2025**, *14*, 13780. https://doi.org/10.3389/past.2024.13780.

16. Rytkönen, P.; Tunón, H. Summer farmers, diversification and rural tourism—Challenges and opportunities in the wake of the entrepreneurial turn in Swedish policies (1991–2019). *Sustainability* **2020**, *2*, 5217. https://doi.org/10.3390/su12125217.
17. Baronti, S.; Ungaro, F.; Maienza, A.; Ugolini, F.; Lagomarsino, A.; Agnelli, A.E.; Calzolari, C.; Pisseri, F.; Robbiati, G.; Vaccari, F.P. Rotational pasture management to increase the sustainability of mountain livestock farms in the Alpine region. *Reg. Environ. Change* **2022**, *22*, 50. https://doi.org/10.1007/s10113-022-01896-1.
18. Pauler, C.M.; Homburger, H.; Lüscher, A.; Scherer-Lorenzen, M.; Schneider, M.K. Ecosystem services in mountain pastures: A complex network of site conditions, climate and management. *Agric. Ecosyst. Environ.* **2025**, *377*, 109272. https://doi.org/10.1016/j.agee.2024.109272.
19. Gundersen, V.; Rybråten, S. Differing perceptions and tensions among tourists and locals concerning a national park region in Norway. *J. Rural Stud.* **2022**, *94*, 477–487. https://doi.org/10.1016/j.jrurstud.2022.07.017.
20. Bele, B.; Simon Nielsen, V.K.; Fairclough, G.; Herring, P. A heritage without boundaries: Nature-culture synergies in and around Norwegian protected landscapes. *Hum. Ecol.* **2024**, *52*, 155–172. https://doi.org/10.1007/s10745-023-00468-z.
21. UNESCO. Summer Farming at Fäbod and Seter: Knowledge, Traditions and Practices Related to the Grazing of Outlying Lands and Artisan Food Production (Nomination File No. 02109); Available online: https://ich.unesco.org/en/decisions/14.COM/10.B.2 (accessed on 15 December 2025).
22. Takola, E.; Sidiropoulou, A.; Karatassiou, M. The impact of transhumance abandonment on land use changes in Mount Pindos (Greece). *Opt. Mediterr. Ser. A* **2016**, *114*, 143–146.
23. Chao, O.; Li, X.; Reyes-García, V. Exploring the dynamic functions of pastoral traditional knowledge for sustainable rangeland management. *Ambio* **2025**, *54*, 932–946. https://doi.org/10.1007/s13280-025-02131-x.
24. Manzano, P.; Malo, J.E. Extreme long-distance seed dispersal via sheep. *Front. Ecol. Environ.* **2006**, *4*, 244–248. https://doi.org/10.1890/1540-9295(2006)004[0244:ELDSDV]2.0.CO;2.
25. Fernández-Guisuraga, J.M.; Fernández-García, V.; Tárrega, R.; Marcos, E.; Valbuena, L.; Pinto, R.; Monte, P.; Beltrán, D.; Huerta, S.; Calvo, L. Transhumant Sheep Grazing Enhances Ecosystem Multifunctionality in Productive Mountain Grasslands: A Case Study in the Cantabrian Mountains. *Front. Ecol. Evol.* **2022**, *10*, 861611. https://doi.org/10.3389/fevo.2022.861611.
26. Lovreglio, R.; Lovreglio, J.; Satta, G.G.A.; Mura, M.; Pulina, A. Assessing the role of forest grazing in reducing fire severity: A mitigation strategy. *Fire* **2024**, *7*, 409. https://doi.org/10.3390/fire7110409.
27. Tennigkeit, T.; Wilkes, A. *An assessment of the Potential for Carbon Finance in Rangelands*. World Agroforestry Centre (ICRAF), Working Paper No. 68, Beijing, China. 2008. https://doi.org/10.5716/WP15892.PDF
28. Toledo, V.M.; Barrera-Bassols, N. La Memoria Biocultural: La Importancia Ecológica de las Sabidurías Tradicionales; Icaria Editorial: Barcelona, Spain, 2008.
29. Segura, L.; Ortiz, R.; Becerra, J.; Ortiz, P. Integrating Fuzzy Cognitive Maps and the Delphi Method in the Conservation of Transhumance Heritage: The Case of Andorra. *Heritage* **2024**, *7*, 2730–2754. https://doi.org/10.3390/heritage7060130.
30. Pretty, J.; Adams, B.; Berkes, F.; Ferreira de Athayde, S.; Dudley, N.; Hunn, E.; Maffi, L.; Milton, K.; Rapport, D.; Robbins, P.; et al. The intersections of biological diversity and cultural diversity: Towards integration. *Conserv. Soc.* **2009**, *7*, 100–112. https://doi.org/10.4103/0972-4923.58642.
31. Turunen, M.T.; Rikkonen, T.; Nikula, A.; Tuulentie, S.; Rautio, P. Between the local and the global?—Reindeer herders' perspectives on land use challenges and conflicts in the Sámi homeland, Finland. *J. Land Use Sci.* **2024**, *19*, 134–149. https://doi.org/10.1080/1747423X.2024.2359606.
32. FAO. *Pastoralism—Making Variability Work*; FAO: Roma, Australia, 2018. Available online: https://openknowledge.fao.org/handle/20.500.14283/CA1312EN (accessed on 1 September 2025).
33. Ocak Yetişgin, S.; Canan, S. Goat transhumance in Mediterranean Turkey: Characterization and key factors driving its transformation. *Pastor. Res. Policy Pract.* **2025**, *15*, 14939. https://doi.org/10.3389/past.2025.14939.
34. Antón, D. Turismo y paisaje rural en zonas de montaña. *Rev. De Estud. Geográficos* **2007**, *68*, 45–67.
35. Amat-Montesinos, X.; Cortés Samper, C.; Larrosa Rocamora, J.A. Patrimonio territorial y paisajístico de la trashumancia en España. Retos hacia un turismo sostenible y responsable. In *Actas del I Congreso Internacional Turismo transversal y Paisaje*; Touriscape: Málaga, Spain, 2018.
36. Belliggiano, A.; Bindi, L.; Ievoli, C. Walking along the Sheeptrack. Rural Tourism, Ecomuseums, and Bio-Cultural Heritage. *Sustainability* **2021**, *13*, 8870. https://doi.org/10.3390/su13168870.
37. Farsani, N.T.; Coelho, C.; Costa, C. Geotourism and geoconservation: A sustainable approach to heritage tourism. *Geoheritage* **2012**, *4*, 185–193. https://doi.org/10.1007/s12371-011-0059-z.

38. Kallas, Z.; Gómez-Limón, J.A.; Barreiro-Hurle, J. Decomposing the Value of Agricultural Multifunctionality: Combining Contingent Valuation and the Analytical Hierarchy Process. *J. Agric. Econ.* **2007**, *58*, 218–241.
39. Available online: https://www.unwto.org/glossary-tourism-terms (accessed on 1 November 2025).
40. Monllor Rico, N.; Soy Massoni, E. El pasturisme: Turisme vivencial a les explotacions ramaderes de pastura de les comarques gironines. *Quad. Agrar.* **2018**, *44*, 93–115. https://doi.org/10.2436/20.1503.01.87.
41. Available online: https://larouto.eu/it/mappa-dellitinerario/ (accessed on 1 November 2025).
42. Gesualdi, I. Vie di Transumanza in Basilicata: Opportunità e Scenari di Valorizzazione in Zazzi, M.; Coppola, E., (a cura di) Cammini, Atti Della XXVI Conferenza Nazionale SIU "Nuove Ecologie Territoriali. Coabitare Mondi che Cambiano", Napoli, 12–14 Giugno 2024, Volume 06; Planum Publisher e Società Italiana degli Urbanisti, Roma-Milano: Rome, Italy, 2025.
43. Available online: https://caminostrashumantes.com/ (accessed on 1 November 2025).
44. Betancor Quintana, G. La trashumancia y el pastoreo en Gran Canaria. In *La Trashumancia y el Pastoreo en Canarias.* Dirección General de Patrimonio Cultural de la Consejería de Educación, Universidades, Cultura y Deportes del Gobierno de Canarias: Tenerife, Spain, 2022; pp. 118–133. ISBN: 978-84-7947-817-9.
45. Moreno-Medina, C.; Gil-León, J.; Parreño-Castellano, J.M.; Quintana Andrés, P.; Bueno García, A.; Hernández Martí, M.; Díaz Rodríguez, S. Documentación Histórica, Recopilación Oral y Cartografía de la Trashumancia en Gran Canaria. Informe Técnico del Servicio de Patrimonio Histórico de la Consejería de Presidencia y Movilidad Sostenible del Cabildo de Gran Canaria; Cabildo de Gran Canaria: Las Palmas de Gran Canaria, Spain, 2021.
46. Evans, J.; Jones, P. The walking interview: Methodology, mobility and place. *Appl. Geogr.* **2021**, *31*, 849–858.
47. Decandia, L. Pastoral Landscapes and Contemporary Territorial Practices; Routledge: Oxford, UK, 2022.
48. Hevia Martín, V.; González Novoa, J.A. El valor de las vías pecuarias como reservorios de biodiversidad y generadoras de servicios de los ecosistemas. *Ambienta* **2017**, *120*, 58–67.
49. Available online: https://www.proquenor.com/ (accessed on 1 November 2025).
50. Moreno-Medina, C.; Monzón Peñate, F.A. Vías pecuarias. In *El Legado de la Trashumancia y el Pastoreo en Canarias*. Dirección General de Patrimonio Cultural de la Consejería de Educación, Universidades, Cultura y Deportes del Gobierno de Canarias: Tenerife, Spain, 2023; pp. 81–112. ISBN: 978-84-7947-833-9.
51. Daugstad, K.; Fernández Mier, M.; Peña-Chocarro, L. Landscapes of transhumance in Norway and Spain: Farmers' practices, perceptions, and value orientations. *Nor. Geogr. Tidsskr.–Nor. J. Geogr.* **2014**, *68*, 248–258. https://doi.org/10.1080/00291951.2014.927395.
52. Ghirardello, L.; Walder, M.; de Rachewiltz, M.; Erschbamer, G. Cultural Sustainability from the Local Perspective: The Example of Transhumance in South Tyrol. *Sustainability* **2022**, *14*, 9052. https://doi.org/10.3390/su14159052.