Speaking our roots: the intertwining of language preservation and ethnobotanical knowledge in the Gallura region of Sardinia, Italy

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ABSTRACT

This paper examines the role of minority languages in Gallura, a region in northern Sardinia, Italy, in preserving cultural heritage and traditional ecological knowledge. Focusing on the minority languages of Gallurese, Logudorese and Maddalenino (a local variety of Gallurese that is often perceived as a distinct language by its speakers), the study investigates how these languages serve as tools for the transmission of traditional ethnobotanical knowledge and traditional botanical knowledge. As globalisation and sociolinguistic shifts draw younger generations towards dominant languages such as Italian, the critical ethnobotanical knowledge embedded in Gallurese, Logudorese and Maddalenino faces the threat of disappearance.

The study investigates the consequences of language decline on biological and cultural diversity and assesses how language preservation can support both cultural identity and sustainable ecological practices. Drawing on the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) (hereafter '2003 Convention') framework, the research addresses the challenges of preserving orally transmitted knowledge and considers the broader consequences of language loss for biocultural diversity. The biocultural heritage approach – which treats linguistic, cultural and ecological knowledge as inseparable and mutually reinforcing dimensions of heritage – provides the overarching theoretical lens for this study.

Using a qualitative methodology consisting of semi-structured interviews with native speakers and local experts, alongside literature analysis, the study identifies key linguistic features and cultural expressions linked to sustainable ecological practices. Findings highlight the deep connection between linguistic diversity and environmental knowledge, emphasising how minority languages shape how local community members understand nature and support intergenerational transmission of sustainable practices. The research contributes to interdisciplinary conversations in ethnolinguistics, heritage management and environmental conservation. By positioning minority languages as active repositories of ecological wisdom, the study highlights their relevance in current sustainability discourse and calls for integrated strategies to protect both linguistic and ecological diversity. Given the exploratory nature of this case study, findings are presented as indicative rather than conclusive, offering a foundation for future research.

Keywords

UNESCO, minority languages, ethnobotany, Sardinia, linguistic identity, traditional ecological knowledge, language endangerment

Introduction

> To be a hill, to be a sandy beach, to be a Saturday, all are possible verbs in a world where everything is alive. Water, land, and even a day, the language a mirror for seeing the animacy of the world, the life that pulses through all things, through pines and nuthatches and mushrooms. This is the language I hear in the woods; this is the language that lets us speak of what wells up all around us.
>
> – Robin Wall Kimmerer, *Braiding sweetgrass* (2020)

In recent decades, intangible heritage has become a growing concern in cultural preservation discourses. Language, in particular, plays a vital yet often underacknowledged role in this domain. While heritage policies have historically centred on tangible assets such as architecture and artifacts, intangible cultural heritage (hereafter 'ICH') – such as languages, oral traditions and traditional knowledge systems – is increasingly being recognised by policymakers and international frameworks as equally vital to community identity and continuity. As the 2003 Convention asserts, languages function as carriers of 'practices, representations, expressions, knowledge and skills' that shape cultural identity and sustain social cohesion, extending far beyond their role as tools of communication.

The interplay between language and ecology is receiving renewed scholarly attention, particularly in relation to Indigenous and minority language communities whose knowledge systems have evolved through generations of interaction with specific environments. Language embodies cultural memory, ecological observation, and the naming and classification of plants. In this sense, the loss of a language can cause the parallel loss of ecological knowledge, traditional medical practices, and balanced relationships with the land. As brilliantly expressed by botanist and writer Robin Wall Kimmerer (2020), the extinction of a language implies far more than the disappearance of words: it signifies the loss of entire ways of knowing. Language, she argues, is 'the dwelling place of ideas that do not exist anywhere else', representing a unique prism through which human beings interpret and inhabit the world.

This paper focuses on the case of Gallura, a subregion of northern Sardinia, Italy. Italian is the official language of Sardinia, as it is throughout the rest of the country. However, the region is also home to several minority languages – among these, Gallurese, Logudorese and Maddalenino (henceforth referred to as 'Isulanu') – which are primarily spoken in Gallura. Each of these languages has historically functioned as a vehicle for transmitting detailed ethnobotanical knowledge. They encode knowledge of native plant species, their culinary and medicinal uses, and the symbolic frameworks relating to human–nature relations. As these languages experience accelerated decline, particularly among younger generations who shift increasingly towards standardised Italian, the intergenerational transmission of this knowledge is under serious threat.

Despite the acknowledged importance of language to intangible heritage, international heritage policy instruments have largely neglected the linguistic dimensions of ecological preservation. As Braber and Howard (2023) argue, dominant preservation policies often privilege tangible heritage while marginalising vernacular languages and the ecological wisdom embedded within them. This gap is particularly acute in regions such as Gallura, where ethnobotanical knowledge is transmitted orally and where these languages – though not entirely absent from public life – remain largely confined to informal contexts and older generations (Lai 2018). They are only occasionally integrated into formal education, mainstream media or administrative domains (Minority Rights Group International 2018).

The research presented in this paper is guided by three core questions, which structure the investigation and are addressed throughout.

1. How do endangered languages contribute to the preservation of ICH, and what are the implications for the communities that speak them?
2. What specific linguistic features of Gallurese and Logudorese express knowledge about ecological practices?
3. How can recognising and documenting ecological terms contribute to sustainable development and cultural preservation?

These questions emerged from the recognition that endangered languages often encode place-based ecological knowledge and yet remain largely overlooked in discussions of sustainability and biocultural diversity. To address them, this paper adopts a qualitative, ethnographically informed approach based on semi-structured interviews with native speakers and local experts, complemented by a comprehensive literature review.

The paper is structured as follows. The section below presents the theoretical and conceptual framework, defining key concepts and situating the study within relevant scholarly debates. Then follows a contextual overview of the linguistic landscape of Gallura and the ethnobotanical knowledge embedded in its dialects. The next two sections present the methodology and

offer a thematic synthesis of the interview findings. The empirical findings are then connected to broader patterns of language endangerment and knowledge erosion, alongside a discussion of revitalisation strategies. Finally, the paper presents the conclusions and implications for heritage preservation policy.

In light of global challenges such as climate change, biodiversity loss and cultural homogenisation, the knowledge preserved in minority languages such as Gallurese, Logudorese and Isulanu becomes increasingly important. This study aims to illustrate the value of linguistic diversity and traditional knowledge, offering insights that may prove relevant to collective efforts to build a more sustainable and culturally rich future.

Theoretical and conceptual framework

Before turning to the empirical material, it is important to establish the conceptual foundations that inform this study. Several key terms structure the analysis and require precise definition, particularly because they are sometimes used interchangeably in the literature but carry distinct meanings.

Ethnobotanical knowledge refers to the practical, symbolic and ecological understandings of plants within a cultural context, encompassing the full range of relationships between human communities and plant life, including naming, classification, use and cultural meaning. It is rarely separated from the language that carries it, as names, descriptors, idioms and taxonomies are embedded in the linguistic systems that evolved through cohabitation with specific ecosystems (Berkes 2012). Since 'ethnobotanical knowledge' appears in the title of this paper, it is worth clarifying from the outset that the term is used here in this broad sense.

Traditional botanical knowledge (hereafter 'TBK') is a subset of a broader category known as traditional ecological knowledge (hereafter 'TEK'). 'TEK' refers to the cumulative body of knowledge, practices and beliefs about the relationship between living beings – including humans – and their environment, developed through generations of adaptation and cultural transmission. TBK more specifically concerns the cumulative understandings, practices and cultural frameworks developed over generations regarding the properties and roles of plant species. It is context-specific, dynamic, and embedded in ritual, memory and practical use (Berkes 2012). TBK includes traditional medicine, agriculture, spiritual practices and ecological governance. Throughout this paper, both TEK and TBK are drawn upon, but they are not used interchangeably: TEK is referenced when discussing the broader relationship between language and environmental knowledge, while TBK is used when the focus is specifically on plant-related knowledge.

The biocultural heritage approach provides the overarching framework for this study. This approach recognises that biological, cultural and linguistic diversity are not parallel but deeply intertwined phenomena, and that the preservation of one dimension inherently requires attending to the others (Maffi and Woodley 2010). Under this framework, languages are understood not merely as communication systems but as active producers and repositories of environmental knowledge. Treating language, culture and ecology as separate domains – as much institutional policy currently does – misses the lived entanglement that defines intangible heritage.

Linguistic diversity and intangible cultural heritage

Languages shape how communities remember, act and understand their place in the world. The global decline in minority and Indigenous languages represents a critical threat to ICH, cultural resilience and epistemological diversity. As UNESCO (2003) stresses, each language embodies the unique cultural wisdom of a people, and their extinction is a loss to all humanity.

Minority languages preserve distinctive knowledge systems, values and perceptions of the world, often inextricably linked to land, biodiversity and cultural continuity. Defined by their use among smaller segments of a larger population (Ethnologue 2023), these languages are frequently oral, place-based and intergenerational – making them particularly vulnerable to modern pressures such as globalisation, national standardisation and urban migration.

Hornberger (1998) highlighted how language carries the cultural and intellectual life of its speakers. For Indigenous and minority communities, language loss implies more than diminished speech: it severs collective memory, interrupts traditional ecological knowledge and dismantles ritual systems. As demonstrated by the Sami

of northern Europe and the Ainu of Japan, the erosion of language leads to the loss of sustainable practice systems that are finely tuned to local landscapes (Mustonen and Lehtinen 2013; Siddle 1996). When Eyak became extinct in Alaska in 2008, for instance, a cultural memory that had endured for two millennia was erased alongside it (Krauss 2006).

In many Indigenous and local communities, the relationship between language and plant knowledge is symbiotic and generative. In minority languages, plant names function simultaneously as memory aids, expressions of cultural worldviews, and systems of classification that help people make sense of their environment. Classifiers in languages such as those of the Hopi and Mapuche peoples convey edibility, toxicity, seasonality and ritual association, functioning as safeguards for intergenerational knowledge transmission (Whorf 1956; Trivero Rivera 2018). Without the sustaining force of language, these knowledge systems collapse.

The pressures leading to language loss are multifaceted. Economic incentives for adopting dominant languages, national language policies, urbanisation and globalisation have accelerated the displacement of minority languages. Language shift – when speakers gradually abandon their heritage language for another – leads to the attrition of embedded cultural systems (Cunliffe 2019). UNESCO's *Atlas of the World's Languages* (2020) calls for active policies integrating minority languages into education, media and governance. Countries such as New Zealand and Hawaii have demonstrated that policy frameworks and community-based language nests can effectively reverse language decline (King 2001; Kawai'ase'a et al. 2007). However, many preservation efforts focus narrowly on documentation rather than revitalisation; without functional transmission through homes, schools and rituals, language becomes static and divorced from lived heritage (Hornberger 2002).

While growing literature addresses either minority language preservation or ecological knowledge, the integrated study of language–ethnobotany–conservation remains underdeveloped. The interdependence of these domains calls for interdisciplinary approaches that synthesise linguistic, cultural and environmental data (Maffi 2005). Key gaps include the lack of longitudinal studies on the effects of language attrition on ecological practice, the scarcity of community-led investigations, and the limited integration of TBK into formal education and environmental policy.

Language, landscape and ethnobotanical memory in Gallura

The Gallura region of northern Sardinia represents an extraordinary site for the study of linguistic and ecological co-presence. Its distinct dialects – Gallurese, Logudorese and Isulanu – serve as both communication systems and living archives of cultural and ecological knowledge. This section of the paper explores the linguistic terrain of Gallura and the ethnobotanical knowledge encoded within it, emphasising the relationship between language, traditional practices and biodiversity, and situating the case study within the broader sociolinguistic landscape of Sardinia.

Gallura is a region with deep historical layers of linguistic influence. As early as the Pre-Nuragic period, the region developed separately from the rest of Sardinia due to its geographic isolation and cultural contact with Corsica (Ferrer 1984). This separation allowed for the emergence of a distinct linguistic landscape that evolved through successive layers of external influence – Byzantine, Catalan-Aragonese, Genoese and Italian – all superimposed on an older substrate of Sardinian and Corsican elements. The resulting distribution of linguistic varieties is shown in Figure 1.

Gallurese exhibits clear linguistic affinities with southern Corsican dialects, especially in phonology and vocabulary, and is internally diversified into subdialects

Figure 1
Map of linguistic variation in Gallura and neighbouring areas in northern Sardinia. Source: Jkens, via Wikipedia/Wikimedia Commons, licensed under CC BY-SA 3.0.

such as Tempiese, Aggese and Faeddu di lu Pasturiu (Maxia 2014). The Faeddu subdialect, for instance, is closely associated with the pastoralist tradition, encapsulating terminologies and idioms used by shepherds and transhumanist herders. Logudorese, spoken in certain parts of Gallura and more broadly in central Sardinia, is a more conservative variety, often described as one of the most Latin-retentive Romance languages. Its lexical and grammatical features offer a different frame for encoding ecological and ritual knowledge, particularly in agricultural and ecclesiastical contexts. Isulanu, spoken on the La Maddalena archipelago, is primarily a variant of Meridional Corsican, but has absorbed elements from Genoese, Ponzese and Spezzino due to historical maritime interactions (Tyson 2020). Despite their differences, all three dialects have functioned as vessels of ICH, containing idiomatic expressions, plant names, proverbs and ritual formulas that cannot be fully translated into standard Italian without semantic loss.

The role of language in traditional ecological knowledge is most vividly seen in the botanical lexicon. Gallura's languages encode a detailed taxonomy of plant species – including not only names but descriptions of appearance, use, habitat and ritual value. These linguistic expressions go beyond simple species identification, conveying the interconnectedness of plants, people and place. Take, for example, *Helichrysum italicum* (see Figure 2), locally known as *buredda* (Gallurese), *caleccasu* (Logudorese) and *scavicciu* (Isulanu). More than mere synonyms, these names evoke specific practices: burning the plant's leaves to remove pig bristles (encoded in *buredda*), or masking fish odour in maritime communities (as *scavicciu*). Such ethnobotanical specificity is not captured in scientific taxonomy, which treats the species as a unit divorced from its cultural roles.

Other terms demonstrate similar depth. The name *caldu tignosu* for *Arctium lappa* var. *minus* (see Figure 3) links directly to its medicinal use for treating ringworm (*tigna*), revealing a convergence of observation, practice and naming. Certain practices associated with these plants, such as *s'affummentu* – the ritual smoking of cheese with Helichrysum to simulate ageing – reveal how language and ecology intertwine with culinary and ritual traditions. These embodied practices, passed on through oral and linguistic means, rely on detailed knowledge of plant properties, accurate terminology and context-specific usage.

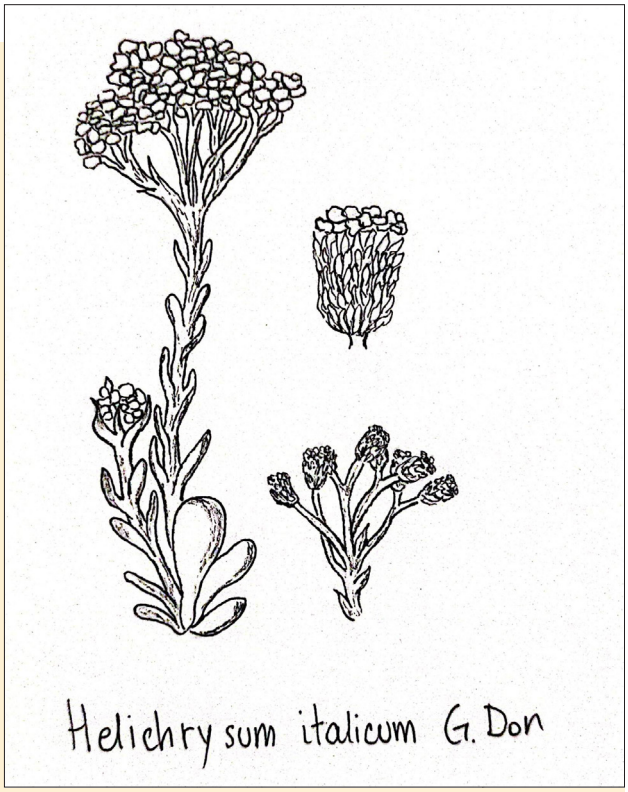

Figure 2
Helichrysum italicum (G. Don). Botanical illustration showing habit and inflorescence details.
Source: Illustration by the author (2026).

Figure 3
Arctium lappa var. *minus* (Bernh). Botanical illustration showing habit details.
Source: Illustration by the author (2024).

The disappearance of these dialects would therefore entail the erasure of local ways of knowing and being in the world. As Smeets (2004) observed, when a language dies, the 'prism' through which ecosystems are understood and managed becomes fractured or lost. In this sense, heritage policies must adopt biocultural frameworks that see language as both a product and producer of environmental knowledge.

Methodology

This study employs a qualitative ethnographic methodology, grounded in principles of cultural heritage research and community-centred inquiry. Situated within the broader context of World Heritage Management and the safeguarding of intangible cultural heritage, the study explores how linguistic diversity in the Gallura region of northern Sardinia contributes to the preservation and transmission of ethnobotanical knowledge.

The research design integrates two core methods: a comprehensive literature review and semi-structured interviews. This approach is consistent with ethnographic traditions, which value in-depth, contextualised understanding of cultural phenomena (Pink 2009). To complement these methods, the researcher undertook immersive learning through formal enrolment in a course on the Gallurese language. This provided not only linguistic insights but also critical understanding of the cultural frameworks and historical significance of the language, enhancing the authenticity and cultural sensitivity of the research process.

Researcher positionality

Reflexivity is essential in qualitative heritage research, and it is important to acknowledge how personal background, experiences and perspectives may influence the research process. As a native Sardinian from Gallura and a fluent Gallurese speaker, this researcher's work has been shaped by first-hand experience of witnessing the gradual fading of local language use and the inadequate transmission of ethnobotanical knowledge – changes that have measurably altered the way communities interact with their local environment. This personal witness gave rise to a deep investment in questions of language preservation and cultural heritage and informed the cultural sensitivity with which the study was approached throughout. A formal course in Gallurese was additionally undertaken for research purposes, not to acquire fluency but to engage more rigorously with the sociolinguistic and pedagogical dimensions of the language as a structured system. Familiarity with Logudorese and Maddalenino, developed through family ties, further enriched the researcher's ability to navigate the multilingual landscape of the interviews. As a native Gallurese speaker and community insider, the researcher's identity inevitably shaped how participants responded, particularly when discussing sensitive topics related to language vitality, cultural identity and the protection of traditional knowledge. Participants may have spoken more openly on certain subjects precisely because they were addressing someone who shared their linguistic and cultural frame of reference – a dynamic that enriches the data but also requires careful reflexive attention. As Martin et al. (2022) have noted, every research involving human subjects is inherently political, and this is especially true when the researcher belongs to the community under study. To mitigate potential biases, a reflexive approach was adopted throughout the research process, regularly revisiting assumptions and interpretations, and engaging with local scholars and community members to ensure that the findings accurately reflect the perspectives and experiences of Gallurese-, Logudorese- and Maddalenino-speaking communities. As Holmes (2020) suggests, positionality need not be treated as a limitation to overcome but as an opportunity to bring a unique and grounded perspective to the research, provided one remains intellectually honest and vigilant against the risk of confirming prior assumptions.

Participant selection and profile

Semi-structured interviews were conducted with a diverse group of participants, including local speakers of Gallurese, Logudorese and Isulanu, as well as community elders, artisans, herbalists and scholars. This method was chosen to capture personal narratives, localised knowledge and intergenerational perspectives. Twelve participants were interviewed across ten municipalities in Gallura, representing both coastal and inland linguistic variations. The spatial distribution of the interview locations is presented in Figure 4.

Participants were selected through purposive sampling, based on their knowledge of local languages and/or ethnobotanical practices, with the sample aiming for diversity in age, gender and community role. The participant table (Table 1) illustrates the linguistic and

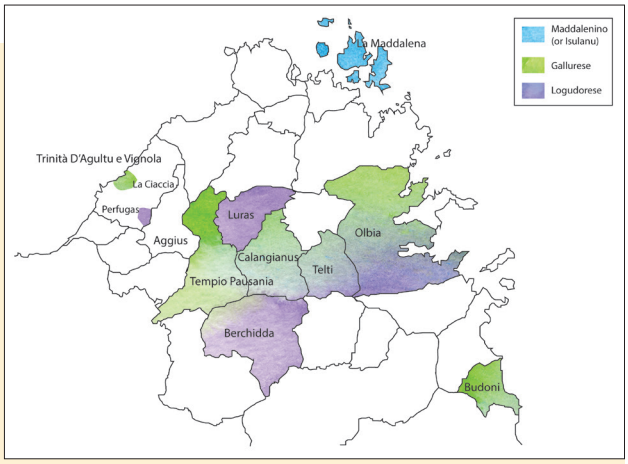

Figure 4
Map of interview locations in Gallura. The map illustrates the geographic distribution of the interview sites.
Source: Created by M. Addis in 2024 under the author's direction for the purposes of this research; reproduced with permission.

occupational diversity of the sample.

One participant is named explicitly: Giovanna Rau, a noted regional botanist whose work in the 1990s pioneered the study of botanical knowledge in the Gallurese language. Her name is included with her explicit informed consent. All other participants are identified by coded labels to protect their privacy. Interviews were conducted in person, lasted between 30 and 60 minutes, and were recorded with the informed consent of all participants. Recordings are stored on a password-protected personal device and will be retained in accordance with standard academic data protection practices, after which they will be permanently deleted. Participants were given the opportunity to express themselves in the language of their choice – Gallurese, Logudorese, Italian or Isulanu – and translations into English were made with care to preserve the cultural register of each statement.

Interview structure and analytical approach

The guiding interview questions explored: frequency and contexts of minority language use; cultural identity associated with language; perceptions of language preservation efforts; transmission of traditional plant knowledge; and language as a medium for ecological knowledge transfer. Four main themes structured the discussions, which also serve as analytical anchors throughout this paper:

- linguistic practice and emotional–cultural associations with minority languages
- transmission of plant knowledge, including medicinal, culinary and symbolic uses
- impact of language decline on ecological memory

Table 1
Language spoken by, and community role of, study participants

Participant	Languages spoken	Community role
GL#1	Gallurese and Italian	Teacher and local-language linguist
GL#2	Gallurese and Italian	Housewife and local folklore enthusiast
GL#3	Italian and Gallurese	Architect and Gallurese scholar
GL#4	Gallurese and Italian	Tailor, herbalist and Gallurese scholar
GL#5	Gallurese and Italian	Housewife and local baker
LG#1	Logudorese and Italian	Artisan and local wood carpenter
LG#2	Logudorese and Italian	Housewife
MD#1	Italian and Isulanu	Retired entrepreneur
MD#2	Italian, Isulanu and Gallurese	Retired military arsenal officer
GLLG#1	Logudorese, Italian and Gallurese	Retired trade unionist
GLLG#2	Italian and Logudorese	Retired forest ranger
GLLG#3	Italian, less fluency in Gallurese and Logudorese	Cook

- strategies for revitalisation, including education, storytelling and community events.

Interview data were transcribed and analysed using thematic analysis, guided by the methodology of Braun and Clarke (2006) and informed by ethnobotanical frameworks such as Sutton (1980). The analytic process involved initial coding of key phrases and recurring ideas, categorisation into thematic clusters aligned with the research questions, and interpretive synthesis drawing links between language use and ecological knowledge. Emerging themes were then triangulated with the literature review to identify patterns of knowledge transmission, language loss and cultural adaptation. Given the exploratory scope of this study – 12 interviews across 10 municipalities – the findings are presented as indicative rather than generalisable, offering a basis for more extensive future research.

Local language use in everyday life: persistence and fragility

This section presents a thematic synthesis of the 12 semi-structured interviews with speakers of Gallurese, Logudorese and Isulanu, structured around the four analytical themes identified in the methodology. The findings illuminate the complex interplay between language use, cultural identity and ethnobotanical knowledge, and contribute to ongoing debates around intangible heritage preservation.

Theme 1: Linguistic practice and emotional–cultural associations

Participants revealed differentiated patterns of language use that correlate with geography, community cohesion and individual identity. Gallurese speakers most frequently reported active and daily use of their dialect, particularly in domestic and informal domains. GL#1 illustrated a profound cognitive and emotional alignment with the language: 'I use it in all contexts. I even think in Gallurese and translate into Italian to make myself understood by others.' GL#2 reported using Gallurese daily, especially at home and with friends from the area; while GL#4 and GL#5 reported using it as their primary language in local contexts, switching to Italian only when necessary.

Mobility and diaspora affect continuity, but do not entirely sever the connection. GL#3, who resides outside Sardinia, uses Gallurese primarily for symbolic purposes through social media and family contact, yet emphasises that the language 'keeps me connected to my roots, not just as a Sardinian, but specifically as someone from Gallura'. This suggests that even in displacement, the language remains a marker of rootedness and belonging.

Logudorese speakers displayed more restricted use, often framed by generational and emotional contexts. LG#1 reported speaking Logudorese primarily in the village and with older community members; while LG#2 noted using it mainly 'with people who share memories', revealing the emotional domain in which the language survives. Isulanu speakers reported the most acute decline. MD#1 observed that 'barely anyone uses Maddalenino anymore'; and both Maddalenino speakers emphasised how, historically, the people of La Maddalena felt more isolated from the rest of Sardinia – linguistically and socially – to the point that some do not identify with the rest of Sardinia at all.

Multilingualism was common across groups. Several interviewees reported code-switching between Gallurese, Logudorese and Italian depending on audience, function and social setting. GLLG#1 recounted being marked as a 'foreigner' for using Logudorese in a predominantly Gallurese-speaking town, illustrating the deep social cues embedded in dialect choice. These patterns suggest a landscape of situational bilingualism or triglossia, where language use is conditioned by shifting sociolinguistic hierarchies. Notably, at the start of interviews, many participants felt slight pressure to express themselves in Italian, assuming it more professional. As conversations progressed, they naturally shifted to their language of choice, visibly relaxing and gaining confidence in their responses – a pattern that itself reveals the diglossic tension structuring their linguistic lives.

These findings align with broader theories of language ideologies (Woolard 2016) which frame language as embedded in power, place and perception. The speakers' narratives reveal the emotional labour of maintaining linguistic identity in a context where dominant discourses valorise monolingualism and standard Italian.

Theme 2: Transmission of plant knowledge

A particularly rich dimension of the interviews concerned traditional ethnobotanical practices and the role of local languages in their transmission. Participants demonstrated considerable awareness of medicinal, culinary and other plant-related uses, often closely tied to

Figure 5
Malva sylvestris L. Botanical illustration showing habit and inflorescence details.
Source: Illustration by the author (2026).

Figure 6
Hypericum perforatum L. Botanical illustration showing habit and inflorescence details.
Source: Illustration by the author (2026).

their local language. This ethnobotanical knowledge was consistently described as having been transmitted orally, primarily within families and local communities. As GL#4 put it: 'The practices were learned from the family. Put into practice as we grew up.'

Medicinal knowledge was particularly prominent. GL#4 described the use of *palmuccia* (*Malva sylvestris* L.) against bronchitis, as an intestinal anti-inflammatory and as a poultice for eye inflammations – a use documented in Sardinia since the 16th century (see Figure 5). GLLG#2 mentioned *coda caaddina* (*Equisetum arvense* L., horsetail) for its vulnerary and healing properties against ulcers and sores, as well as its diuretic effect.

GL#1 and GL#4 both referenced *Hypericum perforatum* L. (Erba di San Giovanni) for burns and skin conditions (see Figure 6). GL#4 also mentioned lentisk for foot baths and odour control, wormwood as a cicatrising agent, and milk thistle (Cardo Mariano) for liver purification.

Culinary knowledge was equally present. Participants mentioned *finocchiu arestu* (*Foeniculum vulgare* – Miller, wild fennel) in traditional dishes; *palmuccia* fruits, also known as *pane e casu* for their wedge-like shape, which were commonly consumed as snacks by children; *multa* (*Myrtus communis* L.) used for making liqueur; and *cicoria* (*Cichorium intybus* L.), which served as a coffee substitute during wartime, shared even with children due to its lack of caffeine. Lentisk oil was also mentioned as a substitute for olive oil in cooking, while plants such as onion and laurel were used for dyeing fabrics. Participants also referred to *Borago officinalis* L. (see Figure 7), known in Gallurese as *succiameli*, a name recalling the practice of children sucking the nectar from its flowers; in Logudorese as *limbuda* or *limba è oe* (a term specific to Luras, where it is also used in *ravioli alla burage*); and as *lingua di boiu* or *borraccia* in Isulanu, and valued both for its culinary uses and its anti-inflammatory and depurative properties (Satta 2016).

Of particular interest were the ritualistic and ethical dimensions of plant use. GL#4 refused to disclose a rare plant's name on record, recalling a past instance in which knowledge of a particular endemic plant – capable, when prepared in a certain way, of healing severe burns – led to its wrongful harvesting and misuse. This reflects

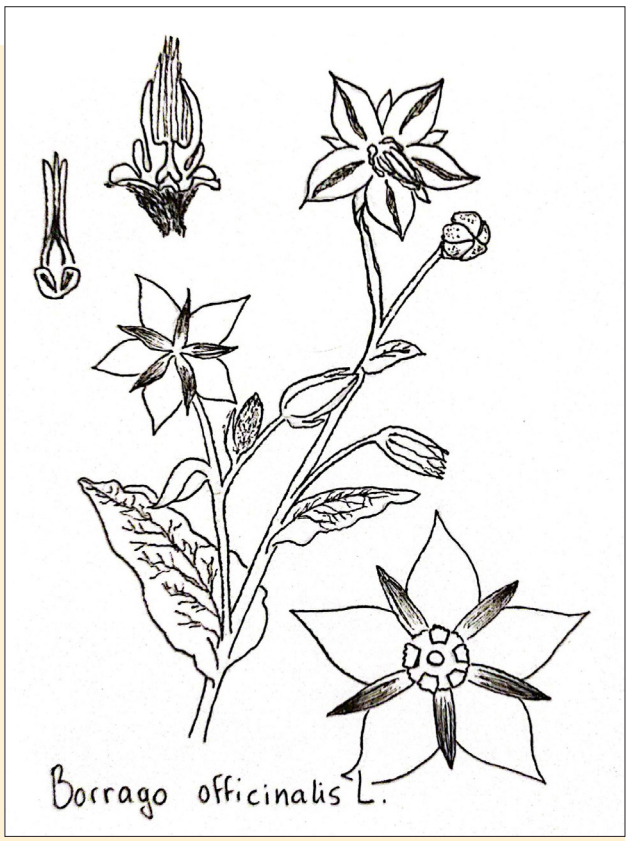

Figure 7
Borrago officinalis L. Botanical illustration showing habit and inflorescence details.
Source: Illustration by the author (2026).

a deeply rooted moral ecology: in the local tradition, knowledge of healing plants is passed on as a mark of trust, and traditional healers must work without economic compensation. As GL#4 expressed, taking more than one needs from nature is seen as an '*offesa i li confronti di la natura*' (an act that offends nature itself). GL#1 also noted that certain rituals involving plants include specific words in Gallurese – *brebus* (healing incantations) – that are essential to the practice itself. Here, the speech act becomes part of the ritual efficacy: translation would dilute not only semantic detail but cultural power (Sutton 1980).

Theme 3: Impact of language decline on ecological memory

Participants consistently highlighted the crucial role of local languages in preserving and transmitting ethnobotanical knowledge, and the threat posed by their decline. GL#1 stated: 'I think it's very important to express oneself and converse with others in Gallurese because I find there are things that are inexplicable in Italian.' GLLG#2 mentioned knowing certain herbs 'only in Logudorese'. These testimonies point to the untranslatability of knowledge systems when dissociated from their original linguistic context, resonating with Sutton's (1980) assertion that language actively shapes and constructs ethnobotanical knowledge.

The correlation between language proficiency and knowledge retention was a recurrent theme. GL#2 observed that her sister, who is less fluent in Gallurese, is also less familiar with traditional plant-related practices – a striking illustration of how linguistic decline can directly erode knowledge, especially in areas not documented in books or digital media. As GL#2 noted, 'My sister, for example, doesn't speak it, even though we grew up in the same family.' This confirms the knowledge–language linkage, and also demonstrates how fluency divergence can emerge within the same household as a result of both external pressures – schooling, media, policy – and shifting family dynamics.

Several participants also noted a broader decline in ethnobotanical knowledge as a result of environmental change. LG#2 observed that 'many of these plants are disappearing due to the ruin of nature and climate change and intensive agriculture', highlighting the double threat facing this knowledge: linguistic erosion from one side, and ecological degradation from the other. As Giovanna Rau noted in her interview, the less communities know about the local ecosystem and its importance to their way of life, the less inclined they are to observe good practices in relation to it.

Awareness of formal preservation efforts was mixed. While GL#1 and GL#3 noted regional and municipal initiatives, university courses and online activism, many other participants – particularly Logudorese and Isulanu speakers – had little to no awareness of any such efforts. Participants identified several structural challenges to transmission: Italian dominance in education and media; disrupted intergenerational linguistic continuity; migration away from rural areas and from Sardinia itself, mostly for economic reasons; and a lack of institutional support or local policy initiatives. In communities such as La Maddalena, the Isulanu dialect lacks any formal recognition whatsoever, further marginalising its speakers.

Theme 4: Strategies for revitalisation

Despite these challenges, participants engaged in a variety of informal preservation strategies: speaking

the language with family members, attending cultural events conducted in the local language, and following social media accounts that promote and celebrate their linguistic heritage. As reported during the Etnosfera Festival held in Aggius in June 2024, several speakers who dedicate their free time to promoting Gallurese and Logudorese on social media noted that, despite limited fluency, younger people are increasingly interested in exploring and reclaiming their linguistic heritage. This suggests a latent enthusiasm which, if nurtured through appropriate institutional and educational support, could play a significant role in revitalisation.

A recurring practical suggestion from participants was the importance of bilingual documentation. LG#2 argued that preserving knowledge in both Logudorese and Italian could ensure accessibility while maintaining cultural authenticity: 'I think it's important to keep the dialect alive and know these things in Logudorese, but it would also be nice to know them in Italian, so we can communicate and share them with more people.' This pragmatic perspective acknowledges the importance of preserving local languages while ensuring that valuable ethnobotanical knowledge remains accessible to a wider audience.

Across all four themes, the findings converge on a singular insight: language and ethnobotanical knowledge are interdependent, co-evolving systems. Loss of one leads to the erosion of the other. These findings demand a biocultural heritage approach in which safeguarding both linguistic and ecological diversity are treated as parallel and integrated goals.

Language endangerment, knowledge erosion and the global context

The patterns observed in Gallura are not unique to this region. Studies from the Amazon, the Himalayas and sub-Saharan Africa similarly show that traditional knowledge systems rely on vernacular languages for transmission and integrity, and that the erosion of those languages precipitates epistemic collapse, with implications for biodiversity, cultural heritage and local autonomy (Maffi 2005; Turpin et al. 2021). In Gallura, the situation is compounded by the sociolinguistic stigma associated with dialects: in urban areas, dialect speakers have historically been viewed as backward, and schools promote standard Italian almost exclusively. Language attrition is accordingly accelerating, and with it the loss of embedded ecological and ritual knowledge.

The intergenerational transmission of botanical knowledge is increasingly fragile. As younger generations shift to speaking Italian, plant names and associated practices are often lost. Even in communities where plants are still used, the linguistic specificity has faded: vernacular terms are replaced with generic Italian names or omitted entirely. In Nuchis, a renowned family of healers maintains closely guarded knowledge of burn remedies involving endemic plants. This knowledge is not recorded in Italian or published but remains embedded in Gallurese and protected by the community's linguistic boundaries. In this way, the language itself functions as an ethical and epistemological safeguard, controlling access and ensuring continuity.

The Gallura case strongly supports the growing consensus in heritage studies that language, culture and ecology are co-constitutive. Treating them as separate domains – language in education, culture in museums, ecology in conservation – misses the lived entanglement that defines intangible heritage. Revitalisation must thus go beyond language as form and embrace language as knowledge. Community-driven projects that document plant names, healing formulas and ritual expressions are crucial. Schools, museums and conservation agencies can collaborate to integrate linguistic data into broader environmental and cultural programs. Bilingual herbariums or ethnobotanical gardens, for instance, could serve as living archives, preserving both flora and the words used to understand them. Such integrated strategies would not only preserve vocabulary but also reactivate cultural practices and social bonds.

Sardinian language policy: institutional framing and gaps

The broader institutional context in Sardinia must also be considered. Italy's Law 482/1999 and Sardinia's Regional Law 26/1997 nominally recognise linguistic plurality: Law 26/1997 explicitly refers to the Sardinian language and various heteroglossic varieties, specifically mentioning the 'Catalan culture and language of Alghero', the 'Tabarchino dialect of the Sulcis islands' and the 'Sassarese and Gallurese dialects' (Toso 2012). However, both laws fail to address the sociolinguistic complexity and intergenerational fragility observed in the field.

One major issue is the grouping of Gallurese and Logudorese under a generalised 'Sardinian language' umbrella, which obscures their distinctiveness and dilutes targeted preservation strategies. The Isulanu dialect, despite its unique features, remains unrecognised in any formal framework. As Fiorenzo Toso observes, it is hypocritical to praise linguistic diversity – including the cognitive benefits of bilingualism and multilingualism – while failing to promote its concrete preservation. Linguistic diversity, he argues, should be safeguarded as seriously as 'natural, monumental, or cultural resources' (Cutrì 2017). National Law 482/1999, which arrived late and focused more on the genetic distance from Italian rather than sociolinguistic realities, has further complicated protection for languages such as Gallurese, leading to inconsistent policies and insufficient funding (Cutrì 2017). These inconsistencies contribute to the North–South divide, pushing younger generations away from their regions of origin in search of economic opportunity, to the detriment of their cultural and linguistic roots.

Conclusions and implications for biocultural heritage preservation

This research examined the intricate relationships among language, culture and ecological knowledge in the Gallura region of Sardinia. Through a combination of ethnographic interviews, linguistic analysis and thematic synthesis, it became clear that the subregion's endangered languages – Gallurese, Logudorese and Isulanu – are essential for the preservation of traditional botanical knowledge, traditional ecological knowledge and intangible cultural heritage more broadly. Given the exploratory scope of this study, with its 12 interviews across 10 municipalities, the findings are presented as indicative rather than definitive, providing a foundation for more extensive future research rather than making broad generalisable claims.

The study addressed three core questions, each of which revealed critical insights.

1. *How do endangered languages contribute to the preservation of intangible cultural heritage, and what are the implications for the communities that speak them?*

   Endangered languages in Gallura are vital to preserving ICH, both as carriers of tradition and as foundations for identity and community memory. They express ritual knowledge, emotional expression and spiritual cosmologies. The decline of these languages represents a parallel decline in practices such as plant-based healing, oral storytelling and culinary heritage – activities deeply embedded in the linguistic medium. The strong link between language proficiency and knowledge retention observed across participants underscores the urgency of integrated preservation approaches.

2. *What specific linguistic features of Gallurese and Logudorese express knowledge about ecological practices?*

   The interviews and linguistic analyses uncovered a complex array of features: vernacular names for flora and fauna that are absent in Italian (e.g. *buredda*, *palmuccia*, *coda caaddina*); idiomatic phrases that encode ecological and moral frameworks (such as *'piddà focu com'e la buredda!'* (to burn like the Helichrysum – used to describe an irascible person); and culturally bound expressions such as *brebus* (healing incantations) which are untranslatable without loss of cultural power. These features demonstrate that Gallurese and Logudorese function as linguistic systems that shape ecological knowledge and transmit it through culturally grounded cognitive frameworks, consistent with the Sapir–Whorf hypothesis (Whorf, 1964) and with Sutton's (1980) emphasis on the role of language in categorising and contextualising plants.

3. *How can recognising and documenting ecological terms contribute to sustainable development and cultural preservation?*

   Recognition and documentation of ecological lexicons promote biocultural sustainability. Preserving language-linked knowledge contributes to safeguarding cultural identity and supports local environmental practices. These terms convey adaptive strategies for land use, seasonal behaviour and health practices that can inform contemporary sustainability initiatives. Documentation also empowers communities to reclaim agency in shaping their own development, aligned with their linguistic and cultural realities. A bilingual approach – preserving knowledge in both local languages and Italian – was suggested by participants as a pragmatic way to maintain authenticity while

ensuring wider accessibility.

Based on these findings, safeguarding Gallura's biocultural heritage calls for a multilevel, integrated strategy.

At the policy level:

- Revise national legislation to grant full linguistic status to Gallurese and Logudorese, recognising their distinctiveness rather than subsuming them under a generalised 'Sardinian' category.
- Formally recognise the Isulanu dialect within regional legislative frameworks.
- Allocate dedicated funding for minority language documentation, teacher training and community-based language nests.
- Support multilingual education that includes local languages alongside Italian and English in schools, modelled after successful programs such as New Zealand's Māori immersion schools (King 2001).

At the community level:

- Establish bilingual ethnobotanical gardens and archives, featuring plant names and uses in the minority languages and Italian.
- Develop oral heritage repositories, recording elder speakers narrating healing practices, rituals and seasonal knowledge.
- Encourage intergenerational transmission through community workshops, mentorship programmes and youth-focused festivals where elders share traditional knowledge.

At the academic and research level:

- Launch cross-disciplinary initiatives linking linguists, ethnobotanists and ecologists in mapping Gallura's biocultural knowledge systems.
- Create digital corpora of local dialects, including audiovisual documentation of plant use, healing incantations and agricultural cycles.
- Encourage participatory research that involves community members as active contributors, co-authors and keepers of their own heritage.

While this study provides valuable insights within its qualitative and exploratory scope, future research would benefit from longitudinal studies tracking language and knowledge transmission across generations; quantitative analysis of fluency levels, plant knowledge and ecological engagement among speakers; and comparative studies between Sardinian communities and other Mediterranean or island-based linguistic minorities. The role of digital technologies and diasporic communities in language preservation also offers a rich vein for future inquiry.

Gallura's case illustrates a global truth: that language, ecology and culture are not parallel but intertwined phenomena. The erosion of one dimension triggers a domino effect of losses in the others. The preservation of endangered languages must not be treated as a niche concern for linguists or cultural anthropologists. It is a strategic priority for sustainable development, climate resilience and social equity. Frameworks such as Biocultural Diversity Conservation (Maffi and Woodley 2010) offer a promising path forward, urging policymakers and scholars to integrate conservation goals across linguistic, cultural and ecological domains.

This research began with a deceptively simple question: What is lost when a language disappears? In the case of Gallura, the answer is not only words, but worlds – ways of seeing, healing, cultivating and belonging. Gallurese, Logudorese and Isulanu are not dying dialects; they are living expressions of cultural resilience, balanced precariously between oblivion and revitalisation. They are living archives, and in preserving them, we are sustaining a worldview rooted in mountains, seas, plants, stories and people – one that has confronted historical invasions and migrations. It is our responsibility, as researchers, policymakers and members of a shared human community, to ensure that this legacy continues to be spoken, sung and lived.

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