



Integrating the biocultural values of field margins into the conservation of traditional farming systems

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Received: 21 November 2025 / Accepted: 18 June 2026
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Abstract

Context Traditional agricultural landscapes are declining globally due to intensification and land consolidation, requiring new perspectives for their effective conservation. Field margins (FM) are essential non-productive elements within these landscapes; although widely eradicated, they hold spiritual significance that can be leveraged to support conservation of the landscapes they shape.

Objectives/methods Drawing on Poland's ecological, folkloric, and religious heritage, this review paper highlights the historical perception of FM as inviolable spaces with cultural and spiritual dimensions. It further proposes applying the framework of Sacred Natural Sites (SNS) to support the conservation of Poland's unique strip-field landscape (PSF), closely associated with FM networks and recognized as part of Europe's cultural heritage.

Results/conclusions Using an interdisciplinary approach, I show that the biocultural values of FM historically supported their persistence and continue to linger today. These values may provide non-economic motivations for conservation, complementing

existing policy instruments. The paper outlines the rationale for recognizing PSF as SNS and proposes general directions for implementation. This approach aligns with evolving international frameworks and demonstrates the potential of SNS to integrate ecological, cultural, and social dimensions of land stewardship. By reframing PSF as biocultural systems, SNS-based strategies offer an innovative pathway to safeguard biodiversity and landscape heterogeneity in transforming agricultural environments.

Keywords Agricultural intensification · Central Europe · Conservation biology · Cultural heritage · Landscape management · Religion

Introduction

Biodiversity conservation in agricultural landscapes is challenging due to conflicting goals between environmental protection and economic productivity (Fischer et al. 2012). Its effectiveness largely depends on the engagement of multiple actors, which can be enhanced by motivations beyond economic benefits. One such motivation is the perception of spiritual significance associated with particular landscape features. Many rural communities uphold religious traditions that foster reverence for specific sites, often perceived as sacred (Borde et al. 2022; Rai and Mishra 2024). Agricultural landscapes are particularly rich in such elements, including sacred trees, springs, and

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s10980-026-02409-9>.

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hills, often considered inviolable in local folklore (Deák et al. 2023). Their spiritual dimension creates opportunities for incorporating such values into conservation policy; however, this potential has until recently remained largely unexplored.

The integration of vernacular spiritualities with biodiversity goals in agricultural landscapes is enabled by the concept of Sacred Natural Sites (SNS), one of the oldest forms of habitat protection in human history. SNS are areas that retain customary and spiritual meanings while supporting high biodiversity (Tatay and Merino 2023) (Table 1). From a conservation perspective, SNS represent a form of nature protection in which biodiversity conservation is secondary to cultural and spiritual values. Nevertheless, their ecological value is often comparable to, or even exceeds, that of formally designated protected areas (Verschuuren and Furuta 2016; Sullivan et al. 2024).

Although SNS have existed for centuries, they have gained prominence as a global conservation concept only within the last two decades, driven by organizations such as UNESCO, IUCN, WWF, and Indigenous rights movements (Dudley et al. 2005; Verschuuren et al. 2010; UNESCO 2014; Zannini et al. 2021). Official IUCN guidelines recognize SNS either as Protected Areas (PAs) or as Other Effective Area-Based Conservation Measures (OECMs) (IUCN-WCPA 2019; Verschuuren et al. 2021). Despite growing recognition, however, the SNS framework remains weakly reflected in legal systems, and clear national criteria for SNS designation are often lacking (Frascaroli et al. 2019). At the same time, this flexibility enables adaptation of SNS governance and management to local socio-cultural conditions, widely regarded as a key principle of SNS conservation (Dudley et al. 2009). Consequently, integrating the SNS concept into agricultural systems may simultaneously strengthen biocultural values and support agricultural sustainability.

Field margins (FM) constitute a distinct category of landscape features, preserved over generations and shaping vast rural areas of Europe and beyond (Baudry et al. 2000; Marshall et al. 2002). In intensively managed farmlands, FM often serve as crucial or even the sole biodiversity refuges (Benton et al. 2003; Mkenda et al. 2019). However, their cultural and spiritual dimensions remain largely overlooked. Historically, FM have been associated with religious customs, folklore, and legal traditions

that reinforced their conservation. Despite these connections, FM have not been recognized as SNS by conservationists or heritage authorities, and today, these values risk being entirely forgotten in the face of the widespread contemporary eradication of FM. In the last three decades of the twentieth century, 500,000 km of linear marginal environments were removed from Finland's agricultural landscape, 740,000 km of hedgerows were lost in France (Le Cœur et al. 2002), and 160,000 km disappeared in the United Kingdom between 1984 and 1993 (Oreszczyn and Lane 2000).

The analysis focuses on Poland—a country distinguished by its internationally significant biodiversity, one of the most extensive FM networks in Europe, a deeply rooted religious tradition, and a rich Slavic folklore heritage (Kloczowski 2000). I argue that the strong attachment to tradition and the spiritual associations linked to FM may have contributed to their persistence in the Polish agricultural landscape. To illustrate this, I refer to a quote that inspired this article—a little-known yet symbolic statement from Polish writer Melchior Wańkowicz (1892–1974), who ranked FM among Poland's five greatest sacred symbols. He allegedly stated: "A hand has five fingers, and we, Poles, have our five sacred 'M's, and woe to anyone who dares to challenge even one of them" (Zin 2004). These symbols were the Holy Mother (Madonna), Mickiewicz, Moniuszko, Matejko, and the field margin (*miedza*) (for explanations, see Online Resource 1). While I do not evaluate Wańkowicz's selection, I highlight the striking inclusion of FM among figures central to Polish religious and national identity.

In addition to their biocultural significance, FM also play a crucial landscape-forming role, as they are an integral part of a unique agricultural landscape—Poland's strip fields (PSF) (Fig. 1). These mosaic-like, narrow fields, recognized as a distinct category of European landscapes (Stanners and Bourdeau 1995), incorporate numerous non-productive elements and harbor high biodiversity. Although this landscape is historically significant, having survived communist collectivization programs and now forming part of Europe's cultural heritage, it is increasingly unprofitable and rapidly disappearing (Baran-Zgłobicka and Zgłobicki 2012; Musiał 2024). While some fragments are protected within landscape parks and designated conservation

Table 1 Definitions of key landscape and ecological terms used in this paper

Term	Definition	References
Field margin (FM)	An elongated, non-cropped area situated between the boundaries of neighbouring arable fields, typically consisting of semi-natural vegetation and often incorporating anthropogenic features such as field roads, ditches, or embankments. Field margins serve ecological, hydrological, or logistical functions and may include a mosaic of herbaceous plants, shrubs, or trees established through natural succession or extensive management	(Le Cœur et al. 2002; Dajdok 2020; Wuczyński et al. 2025)
Balk / baulk	A type of field margin, traditionally defined as an unploughed ridge used to prevent soil erosion or mark field boundaries. In modern agroecological contexts, it refers to a narrow, non-cropped strip between adjacent arable fields, typically covered by herbaceous semi-natural vegetation, with occasional shrubs or trees. Balks demarcate land, support biodiversity, limit runoff and erosion, and enhance ecological connectivity within agricultural landscapes	(Beecham 1956; Ivaşcu and Rákossy 2015), Collins English Dictionary (2025)
Poland's strip fields (PSF)	A distinctive category of European regional landscapes, covering extensive areas of central, eastern, and southern Poland, with deep historical roots. Land is divided into narrow, elongated parcels arranged in a strip pattern, separated by a dense network of field boundaries and rural roads. This landscape developed under traditional, labour-intensive agriculture that survived the collectivization period, but is now increasingly threatened by land consolidation processes	(Kostrowicki 1984; Stanners and Bourdeau 1995)
Sacred natural sites (SNS)	Areas of land or water with special spiritual significance to peoples and communities. These sites vary in size (from individual trees, rocks, and springs to rivers, mountains, and entire landscapes), origin (natural, semi-natural, or human-built structures that have acquired natural characteristics over time), age (from ancient to recently created), and associated belief systems. As the oldest known form of nature conservation, found across cultures and continents, SNS function as biocultural hotspots and play an important role in biodiversity conservation. They may be managed by Indigenous peoples and local communities using traditional practices that promote sustainable resource management and the stewardship of natural resources	(Wild and McLeod 2008; Verschuuren et al. 2010)
Other effective area-based conservation measure (OECM)	Geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services, and, where applicable, cultural, spiritual, socioeconomic, and other locally relevant values	(IUCN-WCPA 2019)

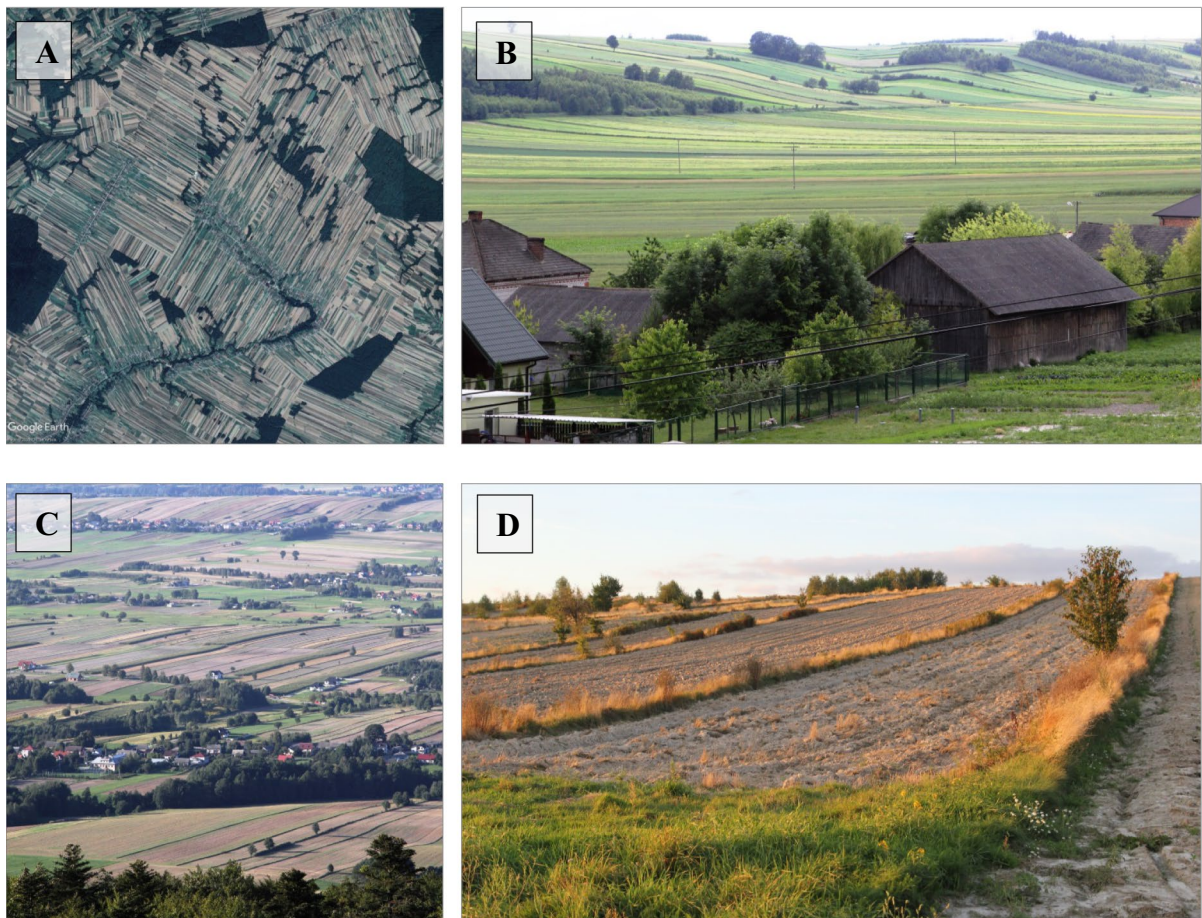


Fig. 1 **A** Aerial view of a strip-field landscape covering extensive areas of central and southeastern Poland. The image shows a 10×10 km section captured from Google Earth (center coordinates: 50°45'N, 22°28'E). **B**, **C** Close-up views

of Poland's strip-fields. **D** A network of semi-natural field margins separating elongated agricultural parcels. (Photo: A. Wuczyński)

areas, these regulatory measures are often insufficient, allowing continued conversion to large-scale agricultural enterprises.

The aim of this publication is to offer a new perspective on FM and the landscapes they shape, and to propose a strategy for their revitalization through integration with the SNS framework—which, surprisingly, has not yet been applied in Poland. The paper first explores the dual role of FM in biodiversity conservation and cultural heritage, demonstrating that their value extends beyond utilitarian functions. The discussion then broadens to include PSF, which provide essential context for the FM network and are an increasing concern for conservation institutions.

Terminology

The landscape features discussed in this study – *field margin* and *balk* – present terminological challenges due to local historical and linguistic conditions (Table 1). Although closely related in landscape and conservation studies, they differ in cultural interpretation. The concept of FM is relatively recent, encompassing a broader ecological and physical scope. However, in Poland, the concept of FM historically did not exist and lacked a linguistic equivalent. The traditional Polish counterpart to FM is "balk" (*miedza*), a term deeply embedded in folk beliefs and rural customs but rarely referenced in international ecological literature.

Given the characteristics of the contemporary agricultural landscape in Poland and current conservation challenges, distinguishing between field margins and balks is of limited practical relevance. Agricultural landscapes consist of a complex mosaics of linear structures that blend elements of both concepts. If a distinction must be made, balks may be regarded as a narrower and structurally less diverse subcategory of FM, although the boundary between the two remains fluid. For these reasons, this study adopts the widely understood term *field margin*, translated into Polish as *pasmo śródpolne*. This choice reflects its ecological meaning while acknowledging that in a cultural context, *balk* would often be the more appropriate term.

Biocultural dimensions of field margins

Field margins and biodiversity

The ecological significance of FM arises from their distinct characteristics compared to surrounding croplands and their structural heterogeneity. These linear semi-natural habitats, often referred to as the green veining of agricultural landscapes (Grashof-Bokdam and van Langevelde 2005), include herbaceous strips along field edges, field roads, drainage ditches, railway embankments, and slopes with associated herbaceous vegetation, shrubs, or trees. Additionally, various structures established under successive EU agricultural policies to meet environmental objectives, such as buffer strips, wildflower strips, beetle banks, and strips sown to bird cover crops, contribute to this category (Vickery et al. 2009).

A vast body of scientific literature addresses FM, including significant review papers that elucidate their varietal, agronomic, and ecological functions (Way and Greig-Smith 1987; Baudry et al. 2000; Marshall et al. 2002; Mkenda et al. 2019; Dajdok 2020). Virtually every agricultural plot is bordered by some form of margin, highlighting their ubiquity and crucial biocenotic role. FM support agroecosystem stability by providing refugia for flora and fauna, breeding and foraging sites, seed banks, dispersal barriers, and ecological corridors facilitating population connectivity. In simplified agricultural landscapes, they may represent the sole remnants of semi-natural habitats. While FM positively influence microclimatic conditions and adjacent crops, they are also

subject to agricultural pressures, including degradation and removal. Despite their ecological role, they remain underexplored, as research has largely focused on hedgerows and tree lines.

The ecological value of FM is best characterized through quantitative data available from various regions worldwide (e.g. Dobrovodská et al. 2019; Mkenda et al. 2019; Fried et al. 2023), including Poland. Our research revealed that a sample of 70 margins, with a total length of 35 km, supported 50 breeding bird species, 37 plant communities, 533 vascular plant species, 90 bryophyte species, and 148 insect families (Wuczyński et al. 2025 and references therein). Notably, threatened species were regularly recorded, which was surprising given the simplified structure of FM and the pressures from agricultural practices. Ornithological data further confirmed the critical role of FM on a broader landscape scale: although they covered only 4–7% of the area, they supported 35% of breeding birds and 36% of wintering birds (Wuczyński and Wuczyński 2019). Such findings should support conservation efforts for FM and the agricultural landscape as a whole, complementing further socio-cultural motivations.

Field margins as demarcation lines

The use of FM to demarcate land and property appears in the earliest historical records. In the Bible, field margins – balks are mentioned six times across three books of the Old Testament (Online Resource 2), consistently underscoring the inviolability of property boundaries. This principle not only structured the traditions, social systems, and legal framework of the Israelites but was also linked to divine law. A commentary on Hosea 5:10 in the Polish Bible states: "*The appropriation of land by shifting boundary markers (stones, field margins) was not only an offense against the landowner but, above all, an offense against God, who granted the land to His people and established rules for its division.*" In major English Bible translations, FM is replaced with terms such as "*boundary mark*," "*boundary stone*," "*boundary line*," or "*landmark*," all emphasizing its role in demarcation (Online Resource 2).

The condemnation of encroaching on FM and altering established boundaries appears in numerous historical records (Beecham 1956). During the feudal era, when land was the primary means of production

and wealth storage, disputes over property lines were frequent due to the scarcity of arable land. These conflicts often persisted across generations, sometimes escalating into violent resolutions (Tazbir 1979). In Western Poland, the frequency of land disputes led to the establishment of a specialized court in the fifteenth century, which maintained exclusive jurisdiction over noble estate boundary cases for three centuries. Such legal proceedings were particularly common in regions dominated by fragmented noble estates rather than large magnate latifundia (Podkowski 2008).

In legal disputes, FM played a crucial role in defining property limits. *"Although the term 'field margin-boundary' had no territorial significance or practical utility—aside from occasional use by peasants for grazing—it held immense importance in legal disputes. As a primary textual and cartographic reference on cadastral maps, it often constituted the most critical evidence in court cases, defining the location and size of land holdings. Consequently, despite its negligible area compared to cultivated fields, it would not be an overstatement to claim that 'the field margin was often more important than the field itself'"* (Podkowski 2008).

Various markers reinforced property boundaries along FM, including trees, hedgerows, stone piles, and large boundary stones (Zacharová et al. 2022). Trees often bore indelible cross-shaped notches (*zaci-osy*) to signify ownership, while pear trees were particularly common along FM, as cutting them down was believed to bring misfortune (Gloger 1978).

Traces of historical land division remain visible across Europe, forming distinctive regional landscapes with unique compositions, ecological value, and cultural significance. Examples include *bocage* landscapes in France, England, and Ireland, medieval *plužina* fields in the Czech Republic, *coltura promiscua* landscapes in Italy and the Iberian Peninsula, and strip fields in Poland (Stanners and Bourdeau 1995). In some Romanian regions, such as Maramureș, where traditional agriculture persists, field margins remain mandatory, maintaining a standard width of 40 cm, equally divided (20 cm per landowner) between neighboring properties (Ivașcu and Rákossy 2015). Although, particularly in areas of intensive agriculture, modern mapping tools reduce the need for permanent physical demarcation features within fields (Escandón-Panchana et al. 2025), FM still

appear to play a role in delineating property boundaries in traditionally managed agricultural systems.

Field margin as a magical space

The liminal positioning of FM rendered it, in folk tradition, a space qualitatively distinct from its surroundings—an inviolable and sacred boundary for religious individuals (Eliade 1970). This distinctiveness in contrast to the homogeneous expanse of fields imbued FM with a magical and mediatory dimension, belonging to two worlds, thereby extending far beyond mere utilitarian concerns. In Poland, the ritualistic and magical functions of FM (reviewed by: Adamowski 1991) in traditional rural communities were remarkably diverse and widespread.

FM served as burial sites for individuals considered socially or spiritually exceptional—illegitimate children and suicides—who, after death, were believed to transform into malevolent spirits. FM were also commonly perceived as dwelling places for tormented souls, including dishonest or corrupt land surveyors and individuals who, during their lifetimes, had plowed over boundary markers or roads. Additionally, FM played a crucial role in folk medicine as sources of medicinal herbs (Dajdok 2020) and as sites for performing healing rituals and incantations. Rich folkloric traditions describe FM as habitats and domains of various demons and apparitions (Pieńczak and Povetkina 2023). These supernatural beings were believed to haunt and attack people, cause illnesses, or abduct children left on field margins. A particularly well-documented figure is the field demon known as *potudnica*, who was said to harm individuals working in the fields at midday, sleeping on FM, or leaving children there (Peřka 1987). Notably, this belief aligns with real health risks associated with exposure to open fields during the hottest hours of the day.

FM also held significance in folk rituals linked to the vernal and summer solstices, particularly the Midsummer Night. These locations were central to agrarian festivities aimed at ensuring bountiful harvests and protecting against hailstorms, as well as matrimonial customs. In the latter context, folk songs frequently reference romantic and courtship themes associated with FM, portraying them as meeting places for lovers, sites of concealed romance, or spaces of consummation (Kolberg 1961–2020).

The spiritual associations of FM not only justify their sacral status but also carry significant practical implications (Adamowski 1991; Ivaşcu and Rákossy 2015). The system of prohibitions and prescriptions embedded in folk beliefs constituted an unwritten code of practice derived from religious, social, and biological motivations. This included the prohibition against shifting boundary markers, removing border trees, staying on FM at certain times (such as at night or midday), lighting fires, allowing a postpartum woman to cross an FM, or burying a sick person's shirt within it. This code must have been preserved orally over centuries, likely varying regionally (Podzorski 2013).

While the former magical functions of FM have largely faded or merged with Christian traditions

(Brzozowska-Krajka 2006; Borde et al. 2022), their spiritual associations endure in material heritage (Żak-Kulesza et al. 2022) and in Christian practices such as field blessings, pilgrimages, and harvest festivals (Błąd and Kaczmarek 2024). Poland's dense network of pilgrimage routes often follows field paths marked by chapels, crosses, shrines, and calvarias (Mróz 2025) (Fig. 2). With over 200,000 freestanding crosses, Poland is aptly called the "land of crosses" (Kozłowski 2011). Notably, the COVID-19 pandemic revived interest in plague (*caravaka*) crosses, again erected as protective symbols (Piotrowicz-Krenc and Witaszek-Samborska 2023). Finally, the recently acknowledged ecological value of FM, together with their continuing role in delineating property boundaries, complements earlier belief-driven motivations.



Fig. 2 Religious sites located along field margins in Poland (Photo: A. Wuczyński)

Bringing spirituality into conservation policy

Despite their recognized values, FM continue to disappear from agricultural landscapes. Why, then, should designation as SNS lead to better preservation outcomes? The key lies in the fact that SNS address the internal motivations, sense of place, and intergenerational attachment of the main actors shaping traditional agricultural systems—local farming communities.

SNS should not become “museums of rural civilization” (Santoro 2024), but remain living and dynamic socio-ecological systems. Their long-term durability depends on trust, participation, and acceptance by local communities (Verschuuren et al. 2021). SNS therefore aim not simply to preserve isolated landscape elements, but to renew awareness of heritage and revive spiritual and cultural meanings that, although fading, still persist in traditional rural societies (Sucholas et al. 2022). This distinguishes SNS from many sustainable-development programmes based primarily on external incentives. Environmental economics increasingly warns that poorly designed market-based conservation schemes may produce motivational crowding-out, whereby external rewards weaken intrinsic motivations for stewardship (Agrawal et al. 2015; IPBES 2022); Li et al. 2025; Bernal-Escobar et al. 2026). By emphasizing heritage, sacredness, and intergenerational connectedness, SNS may help avoid such effects and strengthen socially embedded motivations for conservation.

The potential effectiveness of this approach is particularly relevant in Poland, where Catholicism remains deeply rooted in many rural communities (Kloczowski 2000; Bład and Kaczmarek 2024). Religious institutions and rituals may therefore lend legitimacy and continuity to SNS more effectively than external policy interventions alone. Ederer et al. (2022) presented convincing case studies of faith-based conservation initiatives, demonstrating that Christian faith can constitute a meaningful motivation for conservation even in Western societies often perceived as predominantly secular.

Ultimately, although FM remain active components of spiritual landscapes and could individually qualify as SNS, conserving isolated margins alone would be insufficient. What is at stake is the preservation of Poland’s strip-field landscape (PSF) as an integrated biocultural system. The following sections

therefore outline arguments for recognizing PSF as a “sacred network of field margins” and propose general directions for its implementation.

Rationale for recognizing strip field landscapes as SNS

PSF constitutes a symbolically ordered spatial system shaped over centuries by customary land use, belief systems, and collective memory. It demonstrates strong spatial and spiritual resilience, having persisted through communist-era secularization and ongoing economic pressures. The spiritual dimension of PSF is closely linked to FM, as discussed above. This significance is reinforced through local beliefs, farming traditions, material culture, and recurring religious celebrations. However, this vernacular spirituality—alongside ecological values—is now weakening, highlighting the urgency of protection. There is growing concern that many rural areas in Poland are experiencing a “poverty trap”, as described by Hartel et al. (2023). In such contexts, biodiversity and traditional ecological knowledge are not sustained by active choice, but by the absence of alternatives—rooted in economic deprivation (Fig. 3). Nevertheless, PSF regions still retain substantial cultural and natural capital with the potential to support rural revitalization if timely, multidimensional interventions are undertaken.

The SNS framework offers a promising conservation narrative for agricultural mosaics, as it reconciles diverse objectives and community expectations.



Fig. 3 Firewood collection as a historical function of field margins (Photo: A. Wuczyński)

Depending on perspective, PSF-based SNS may be conceptualized in different ways. From a physical and cultural standpoint, they correspond to sacred semi-natural sites, defined as semi-cultivated landscapes with spiritual significance (Dudley et al. 2005). From an ecosystem services perspective, they provide a wide range of material benefits and, to a lesser extent, spiritual services (Ma et al. 2022). From the viewpoint of institutional economic theory, they resemble common-pool resource systems (Rutte 2011). A common feature across these approaches is that resource use within SNS is not excluded but balanced with spiritual and cultural functions. Such integration fosters social acceptance and strengthens the potential of SNS to serve as effective socio-ecological conservation models.

Crucially, SNS framework aligns with evolving trends in both European and global conservation policy. First, although SNS are not formally recognized within the EU's Common Agricultural Policy (CAP), current CAP mechanisms increasingly emphasize the environmental importance of landscape features such as FM. The creation, restoration, and maintenance of these features are positioned as vital components for delivering environmental ambition in the current CAP framework (Czucz et al. 2022). While implementation in Poland has so far been limited (Pępkowska-Król et al. 2025), financial instruments already exist and could facilitate SNS designation. Second, recognition is growing that formal Protected Areas alone are insufficient to halt global biodiversity loss (Maxwell et al. 2020). This prompted the introduction of Other Effective Area-Based Conservation Measures (OECMs), which extend conservation to areas where biodiversity protection is an indirect outcome (Frascaroli et al. 2019; Cook 2024). PSF-based SNS exemplify this model—delivering both cultural and ecological benefits, without requiring to be the primary land-use goal. Third, to safeguard the diversity of traditional agricultural systems, the Food and Agriculture Organization launched the Globally Important Agricultural Heritage Systems (GIAHS) programme (Agnoletti et al. 2023). In addition to integrating biodiversity, traditional knowledge, and resilient land-use practices, the programme explicitly acknowledges “customary laws and practices as well as ceremonial, religious and/or spiritual experiences” associated with agricultural landscapes. As of April 2026, 104 systems in 29 countries have been

designated under the GIAHS programme (www.fao.org/giahs/en), making it the world's most important initiatives dedicated to traditional rural landscapes. Although no Polish agricultural systems have yet been designated as GIAHS, the programme's objectives and underlying principles make this approach highly relevant to the conservation of PSF.

Implementing the SNS framework in strip field landscapes

For the successful implementation of SNS, key priorities include legal recognition of PSF as cultural heritage, integration with landscape policy, and close collaboration between farmers, conservationists, religious institutions, folklore NGOs and researchers. This approach must encompass ecological, cultural, and spiritual dimensions while sustaining rural traditions (Baran-Zgłobicka and Zgłobicki 2012). Several guiding documents and case studies (Wild and McLeod 2008; Verschuuren et al. 2021) provide practical insights into SNS establishment and management. While these can be adapted to PSF, they stress the need for site-specific, community-centered approaches.

In Poland, a first step should involve raising awareness among local landowners about the cultural value and long-term significance of PSF. This includes renewing the sense of heritage and reviving the spiritual meanings associated with these landscapes, as discussed above. Pilot SNS designations could serve as demonstration models, with initial focus on areas already under protection, particularly landscape parks (Wild and McLeod 2008). These parks often include extensive strip-field zones (<https://geoserwis.gdos.gov.pl>) and incorporate PSF into their management plans. Their nationwide coverage, funding capacity, and experience with educational initiatives further support their suitability. Similar strategies have been proposed in Polish geoconservation projects (Sygar and Zgłobicki 2022). However, since PSF only marginally overlap with legally protected areas, the next step should involve integrating SNS with alternative conservation measures, such as OECMs. This, however, requires both the adoption of the SNS concept within Poland and further refinement of international guidelines for effective OECM implementation (Cook 2024). In this context, it may be valuable to draw on existing examples of community-based

landscape stewardship in Poland that share similarities with SNS, such as traditional pastoral commons in mountain regions (Makovicky 2026) or communal hay-meadow management in lowland wetlands (Sucholas et al. 2022). These examples reveal both the limitations imposed by dominant models of fixed land governance and the capacity of local communities to adapt management practices to local legal and environmental conditions while relying on traditional ecological knowledge.

Ultimately, the success and longevity of SNS depend on securing the trust and participation of local communities. Designation must respect landowners' rights, and include financial incentives within existing agricultural policy, which will require legislative adjustments. Although challenging, this is achievable, as the current CAP shifts from compliance-based to performance-based approaches, granting member states greater flexibility in meeting EU-wide goals (Czúcz et al. 2022). In the longer term, it may be hoped that financial incentives, combined with genuinely participatory forms of cooperation, will have a crowding-in effect — that is, they will strengthen and sustain people's intrinsic motivation to preserve SNS (Agrawal et al. 2015; IPBES 2022). Finally, the involvement of the Catholic Church is essential, as its authority in rural Poland can strengthen community support for conservation by lending authenticity to religious rituals performed in the fields, thereby reenacting sacredness (Tatay and Merino 2023).

Conclusions

Beginning with the ecological and cultural significance of field margins, this paper has highlighted the latent spiritual dimension embedded in traditional agricultural systems. In technologically advanced societies, materialist worldviews have often hindered the integration of spiritual values into conservation management (Verschuuren et al. 2010). The concept of SNS offers a compelling counterbalance. Its application to agroecosystems remains novel and challenging—especially in countries like Poland, where SNS are virtually absent. The broader transferability of FM-based SNS beyond Poland likely depends on the coexistence of two conditions: the persistence of traditional agricultural structures and the survival of spiritual

or cultural traditions embedded in the landscape. Although agricultural mosaics rich in semi-natural habitats remain present across parts of Central and Eastern Europe, including the Czech Republic, Slovakia, and Hungary (Babai et al. 2015; Dobrovodská et al. 2019; Prus et al. 2021; Fanta et al. 2022; Zacharová et al. 2022), they are usually discussed primarily from ecological or historical perspectives, with little attention paid to spiritual dimensions. In this context, Romania appears particularly comparable to Poland due to the coexistence of low-intensity farming systems, extensive field-margin networks, dispersed sacred objects, and enduring rural religiosity (Ivaşcu and Rákossy 2015; Flora, 2005). This suggests that the proposed framework may have broader relevance wherever biocultural continuity has not yet been entirely disrupted by agricultural modernization.

I argue that SNS can support ambitious biodiversity goals within traditional systems such as PSF. The approach also helps reframe prevailing views of traditional farming, often dismissed as economically inefficient and thus expendable (Clough et al. 2020; Hartel et al. 2023). Achieving this vision requires a fundamental shift in how rural communities, policymakers, and conservation actors perceive PSF and its biocultural value. A broad, multifaceted, and innovative strategy—anchored in ambitious targets—offers real hope for safeguarding this unique agricultural heritage while contributing to global biodiversity objectives.

Acknowledgements I am grateful to Waldemar Bena, Zygmunt Dajdok, Piotr Tryjanowski, Krystyna Wuczyńska and anonymous reviewers for their valuable comments on the initial version of the manuscript. I also thank Waldemar Bena for kindly providing photographs and for recalling the forgotten list of Polish sacred symbols. This study was supported by the Institute of Nature Conservation, Polish Academy of Sciences as a statutory activity.

Author contributions The author conducted all research and wrote the manuscript independently.

Funding This study was supported by the Institute of Nature Conservation, Polish Academy of Sciences as a statutory activity.

Data availability No datasets were generated or analysed during the current study.

Declarations

Competing interests The author declares no competing interests.

Ethical approval This study did not involve human participants or animals; therefore, ethical approval was not required.

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