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People and Nature

PERSPECTIVE

Sharing Landscapes with Wildlife: Conflict and Coexistence of Extensive Grazing Systems with Large Carnivores

Who is local and what do they know? Braiding knowledges within carnivore management in Europe

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Abstract

1. Growing recognition of Indigenous Peoples and traditional local communities as stewards of biodiversity has brought to the fore the issues of knowledge and value pluralism in conservation policy and practice. Given their basis in practical and multi-generational experience, Indigenous and local knowledges are highly relevant to managing human–wildlife interactions, especially species that are challenging to live with. Yet, these situated forms of knowledge remain overlooked and marginalised, especially 'local knowledge', as it is unclear what or whom is encompassed within the term.
2. We explore local knowledge in the context of pastoral areas in Europe, where populations of large carnivores such as wolves are currently expanding. We ask: who is 'local', what constitutes 'local knowledge' and what can this knowledge contribute to carnivore management?
3. We show that continuous exchanges between long-settled residents, newcomers and transient people in pastoral areas mean that 'localness' cannot be approached as a dualist position. Similarly, local knowledge is dynamic and continuously evolving in the face of ongoing and emerging change, which makes efforts of categorisation and preservation complex.
4. We argue that current approaches to incorporating local knowledge often fail to account for this complexity, producing unjust and ineffective policies and strategies. To advance understanding, we offer an approach that situates local knowledge and those who hold it on a spectrum of knowledge characteristics. We then describe the challenges of braiding knowledge that are particularly relevant for carnivore management, illustrated by examples from our own research and the broader literature.

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5. To tackle the challenges, we propose 'spacing' conservation planning by investing in networks of emplaced practitioners, tasked with coordinating the mobilisation and braiding of relevant knowledges and producing locally adapted strategies for coexistence.
6. *Policy implications*. Pluralism in carnivore management goes beyond incorporating the technical know-how of local communities. It requires a better recognition and braiding of different kinds of knowledge and skills, at all scales, to produce better outcomes for people and nature.

KEYWORDS
biocultural diversity, carnivore management, human–wildlife coexistence, local knowledge, pastoral areas, stakeholder mapping

1 | INTRODUCTION

Much of what humanity knows about the natural world is embodied in stories, languages, practices, cultures and relationships, which have been forged over generations of coexistence with specific ecosystems and species (IPBES, 2022). Yet, such situated or 'vernacular' knowledge (see Bartel, 2014) is often neglected in environmental and natural resource governance, which is dominated by perspectives and information from the natural sciences (Kadykalo et al., 2021; Pascual et al., 2021). The failure to learn from and support the systems of governance that have co-evolved with and cared for nature has been a leading cause of misaligned conservation and development programmes worldwide (Dawson et al., 2021; Li, 2007).

To ensure locally relevant and socially just management strategies, and to redefine dominant visions of prosperity, a mounting body of work has emphasised that Western science must be complemented by other forms and sources of knowledge (Díaz et al., 2018; Ogar et al., 2020; Wall Kimmerer, 2013). This has become a central tenet of the 2030 Global Biodiversity Framework (GBF) (2022) and its underpinning guidelines from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2022). The increased focus on relational approaches to human–nature connections, recognising plural ways of knowing, valuing and living with/in/from/as nature, is highly relevant for managing large carnivores in pastoral areas. Numerous studies have illustrated that conflicting worldviews and priorities underpin most carnivore-related conflicts in these systems (Lécuyer et al., 2022; Redpath et al., 2015; Salvatori et al., 2021). Yet, interventions are still predominantly focused on mitigating the impacts of carnivores, rather than addressing underlying drivers of conflict (Zimmermann et al., 2020).

Many questions remain about the operationalisation of pluralism within conservation policy (Pascual et al., 2021), including whose and what type of knowledge is relevant. There is a growing emphasis on Indigenous Peoples and traditional local communities, referring to those whose identity, livelihoods and knowledge systems are tied to specific bio-cultural systems (IPBES, 2022). Indigenous Peoples constitute approximately 6% of the global population and often have distinct languages and cultures from their surrounding context (Hill et al., 2019; IPBES, 2022). Their knowledge and rights are increasingly recognised, including through the Declaration on the Rights of Indigenous Peoples (United Nations, 2007). 'Local communities', however, a category that concerns up to 45% of the global population, lack commensurate recognition, leading to uncertainty and disparity in the consideration of local knowledge (LK), and perpetuating injustice towards LK holders (Molnár, Fernández-Llamazares, et al., 2023). This is apparent in Europe, which has only one Indigenous population recognised as such (the Sámi in northern Fenno-Scandia), but where there are thousands of local communities whose cultures, identities and livelihoods are distinct and intimately tied to nature. Like the Sámi, many are pastoralists, and their co-evolution with the land can be traced back up to 7000 years in some parts of the continent (e.g. Antolín & Saña, 2022). However, in conservation efforts, their experiences and observations are often regarded as beliefs or opinions, rather than evidence that could inform action (Papp et al., 2022).

In this perspective, we advance the debate on how LK may be recognised and treated more justly in European conservation policy. Applying relational thinking (West et al., 2020), we explore the questions 'Who is local?' and 'What constitutes local knowledge?' in pastoral contexts; illuminate prevalent challenges of braiding knowledge within carnivore management; and illustrate how nurturing relationships in place and practice can help to address the challenges and produce locally adapted strategies for coexistence.

There is no internationally accepted definition of local communities (Brondizio et al., 2019), and we do not intend to provide one here. Similarly, we do not seek to compare or contrast Indigenous and local knowledges, but acknowledge there are important distinctions (including autonomy and epistemic compatibility) which have implications for whether they at all can or *should* be braided with science (see Corbera et al., 2024; Whyte, 2017 for discussions on decolonising conservation and sustainability science).

2 | WHO IS LOCAL?

Understanding who is 'local' in rural Europe is complicated by continuous socio-economic change, including the appropriation of

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TABLE 1 Key characteristics of local knowledge holders, which with time and place-embeddedness are of increasing relevance for the design of locally adapted coexistence strategies.

	Time, embeddedness in local place and relations		
Characteristics of "localness"	**Not local**	→	**Long settled**
Resident in locality	No	→	Permanent
Time spent in the locality	None	→	Since birth
Ancestral ties	None	→	Multiple generations
Integration within local knowledge networks	No	→	Carrier of knowledge from previous generations
Familiarity with the bio-cultural system	None	→	Dependent on and/or spends ample time within the system
Connection to/meaning of locality	None	→	Embedded through livelihood/family/(cultural) identity/worldviews
Command of local language/dialect	No	→	Native speaker
Locals of particular relevance for carnivore-pastoralism interactions			
Likelihood of encountering carnivores	None	→	Frequent observations/ encounters/direct impacts
Vulnerability to carnivore impacts	None	→	High vulnerability (emotional, physical and/or economic)
Relationship to pastoralism and livestock keeping	None	→	Main livelihood, multi-generational understanding
Involvement in natural resource management and conservation (pastures, forests, commons, wildlife, and game)	None	→	Part of livelihood or identity, multi-generational understanding
Embedded within relevant local institutions	External	→	Deeply embedded in/ representative of

commons, tertiarization of the economy and agricultural policies that disfavour traditional farming practices (Donfrancesco, 2024; Torre et al., 2022). Difficult living and working conditions and poor economic returns have rendered pastoral areas susceptible to de-population and abandonment, and pastoralists have become reliant on supplementary economic activities to sustain their livelihoods (Krauß & Olwig, 2018). Many areas have observed a change in the pastoral workforce from family members to salaried labourers, and more recently, a growing dependency on migrant workers, including from Africa and Asia (Nori, 2022).

Pastoral areas are also increasingly well-connected, which has resulted in the arrival of new types of inhabitants ('neo-rurals') and the growth of tourism-related activities. The influx has introduced new interests, approaches, values and priorities (Vaccaro et al., 2023), including more favourable attitudes towards carnivores (Bruskotter et al., 2017), which can cause tensions with long-settled inhabitants (Nori & Berzi, 2021). However, newcomers can also instigate a renaissance of traditional culture and activities that promote local identities and social cohesion (López & Pardo, 2018; Torre et al., 2022). For instance, new farmers/pastoralists adopt a range of non-conventional practices that are re-invigorating local agri-food systems (Vizuete et al., 2024), although shallow knowledge of system-dynamics often means that they are less resilient than traditional practices (Gretter et al., 2019; Mailfert, 2007).

Given these circumstances, defining who is local and a legitimate holder of LK is complex. The above examples illustrate that 'localness' should not be considered a dualist position but as a continuum from those not local to those long-settled. Factors such as time spent in the territory and the activities carried out can illuminate the locals with the deepest connection and contribution to the bio-cultural system, as well as those who are most knowledgeable of and vulnerable to carnivore impacts (Table 1).

The continuum approach recognises that the knowledge, world-views and values of traditional LK holders are deserving of particular

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consideration and respect within conservation management, and facilitates identifying and empowering local biodiversity stewards (Carmenta et al., 2023; Roe, 2020). However, it does not mean disregarding new or temporary residents, who can still provide valuable perspectives. Examples include researchers with local expertise and neo-rurals whose ideas or practices are in the process of becoming embedded. In addition, not all locals have lifestyles that generate knowledge about wildlife, but their perceptions may still contribute to conflict or coexistence in significant ways, including through voting behaviour and advocacy (Linnell, 2023). Accordingly, different forms and timescales of 'localness' must be considered simultaneously within processes of stakeholder mapping, situational analysis and community engagement (see Hauck et al., 2016), for which Table 1 can function as a heuristic. The next step is to explore what these different groups of locals know.

3 | WHAT DO THEY KNOW?

Knowledge, simply defined, is the understanding of or information about a subject that can be gained through experience or study, known by one or more people (Cambridge Dictionary, 2023). Intimate familiarity with a place and dependence on its resources yields LK: a combination of understanding, practical wisdom and perceptions about what is appropriate in a place (Ingold, 2018; Ogar et al., 2020). It is expressed as practices, technologies, institutions and values that are embedded in the relationship between people and nature (IPBES, 2022), becoming increasingly profound and stable (but not static) through time and cultural maturation (Table 2). Such 'slow knowledge' (see Orr, 1996) underpins stewardship that has maintained highly resilient bio-cultural systems across the globe, including some of Europe's pastoral areas (Agnoletti & Emanueli, 2016; Nori, 2022). Slow knowledge often sits in contrast to the scientific knowledge that underpins most conservation policy, which is (ostensibly) divorced from values and subjectivity (Matuk et al., 2020; Pascual et al., 2021). Scientific and other 'fast' knowledge, that is, that which can be measured, generalised and readily retrieved in a written form, has been propelled by the rise of the global economy and information age (Büscher, 2020). Accordingly, it is defined by power and instability, and its rapidly increasing volume impedes the assimilation of relevant information for specific contexts (Orr, 1996).

Yet, knowledge is often meaningless without the context, history and positionality of place (Büscher, 2020; Williams, 2014). In recent decades, LK has become a research topic under various umbrella terms, including traditional ecological knowledge (TEK) and ethnoecological knowledge (e.g. Molnár, Aumeeruddy-Thomas, et al., 2023; Molnár & Babai, 2021). It overlaps with the work on Indigenous knowledge and shares its aim to challenge and complement scientific knowledge (Hill et al., 2020). This work has transformed understandings of multi-species interactions in pastoral areas and has proven invaluable in informing coexistence programmes (HWCCSG, 2023; Linnell, 2023). For instance, it has illuminated Romanian shepherds' intricate bond with guardian dogs, evolved over generations to protect their livestock from wolves, brown bears and lynx (Ivaşcu & Biro, 2020). This aspect of LK has become popular among conservationists since it is compatible with carnivore conservation (i.e. a means to an end), as illustrated by widespread, often top-down efforts to revitalise and spread these practices (e.g. LIFE Euro Large Carnivores, n.d.).

	Time, cultural maturation		
Key characteristics of local knowledge	**Fast, shallow, general**	→	**Slow, deep, emplaced**
Situated in place and social context	Developed externally	→	Developed within and for the biocultural system
Focus	Isolated entities and their interactions	→	(Local) context and interconnections
Scale/scope	Generalised	→	Specific
Shared within the social context	Isolated	→	Widely held within interest groups or communities
Locally validated	Not locally validated	→	Developed and adapted to local conditions
Practised	Theoretical or practised elsewhere	→	Embedded in local resource practices, techniques, and innovations
Relationally embedded	Not embedded	→	Embedded in local worldviews, identities, values, and heritage
Locally cumulative (over time)	Disconnected	→	Based on multi-generational community learning, i.e. TEK

TABLE 2 Local knowledge, progressing with time towards an increasingly profound understanding of how to live with, care for and manage nature in a particular place.

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Yet, LK of relevance to carnivore management extends beyond traditional damage prevention, including the wider context in which these practices made sense, why they became obsolete and new adaptations and preferences that are impacting local coexistence conditions (Pettersson, Quinn, Holmes, Sait, & Lopez-Bao, 2021). One example is the introduction of digital fencing in Norway. It is highly valued since it has enabled the persistence of its mountain pastures (Søraa & Vik, 2021), but it leaves livestock vulnerable to predators. LK-holders can also illuminate whether traditional knowledge is maintained by choice or because of poverty and lack of alternatives, that is, the 'TEK conundrum' (see Hartel et al., 2023). For instance, the traditional use of guardian dogs, enclosures and shepherding is widely lauded as a solution to livestock depredation, yet pastoralists in Spain who maintained these practices described them as 'slave-like', economically unviable, detrimental to stock health and a cause of social tensions (e.g. guardian dogs attacking/scaring tourists and wildlife), all of which undermined their well-being and generational turnover (Pettersson, Quinn, Holmes, & Sait, 2021). LK is thereby instrumental in ascertaining if traditional approaches can be (re)adapted to the present context, whether new technologies can be useful and what problems remain or emerge once applied. LK also improves the accuracy of depredation statistics, which are often skewed by reporting biases, and the broader understanding of the economic, cultural and emotional impacts of different management strategies (Pooley, 2022; Salvatori et al., 2023).

An often neglected aspect of LK is ethnozoology, including detailed observations about the presence, behaviour and function of wildlife in a particular place (Ulicsni et al., 2019). These observations are generally disregarded by scientists as anecdotal but are essential to explain conflict and coexistence at the local scale. For instance, shepherds in northern Spain correlated increased livestock depredation with the growing expanse of scrub, providing wolves with favourable opportunities for sheltered ambush, including during daylight hours. Accordingly, the removal of scrub was considered crucial to promote coexistence, a measure that has been largely overlooked in policy (Pettersson, Quinn, Holmes, & Sait, 2021). In the Rhodope Mountains (Bulgaria), villagers are adapting to the marked increase in bear abundance by learning to read their tracks and behaviour, thus avoiding dangerous encounters (Toncheva & Fletcher, 2021). These examples illustrate the role of LK in complementing the understanding of cause–effect relationships (Nori & Scoones, 2019): animal agency (Edelblutte et al., 2023), vulnerability (Smit & Wandel, 2006) and the adaptive capacities of people and carnivores at fine spatial scales (Carter & Linnell, 2016), providing key insights for management.

4 | BRAIDING KNOWLEDGE AND ITS CHALLENGES

In the last decade, the concept of 'braiding' or 'weaving' has gained prominence among Indigenous and non-Indigenous scholars (see Tengö et al., 2017; Wall Kimmerer, 2013), coinciding with the establishment of IPBES and the increasing application of relational thinking to understand diverse human–nature connections (Chan et al., 2016; West et al., 2020). Together with 'co-production' (see Norström et al., 2020), it answers calls within sustainability science to move beyond integration, valuing the complementarity of different knowledge systems as a result of their inherent differences, rather than using one to (in)validate the other (Hill et al., 2020). Within conservation, the goal is to foster mutual respect and social learning, leading to more decentralised, effective and culturally appropriate strategies that amplify the contribution of local communities to biodiversity (achieving 'connected' or 'convivial' conservation, see Büscher & Fletcher, 2019; Carmenta et al., 2023). However, as described in depth by Nakata (2007) and Whyte (2017), true braiding faces various critiques and challenges. Below we discuss those of particular relevance for carnivore management in pastoral areas.

4.1 | Establishing equitable partnerships

Reconciling carnivore conservation and the maintenance of pastoral systems requires mutual trust and the ability to discuss issues on equal terms. Yet approaches to coexistence are typically negotiated within frameworks designed to fulfil conservation targets, placing scientists and conservationists as the gatekeepers of knowledge and solutions (Pascual et al., 2021). This can lead to tokenistic involvement of stakeholders; for instance, by consulting them once targets or plans are already established (Lécuyer et al., 2024; Papp et al., 2022). Even where carnivore management has been decentralised, such as in Norway and Sweden, Sjölander-Lindqvist et al. (2020) showed that LK holders still lack the capacity for real policy impact. While some local platforms successfully reached compromises about coexistence measures, their realisation was often overruled by central sector agencies who dismissed local evidence. Upward accountability to locally agreed outcomes is a common issue for stakeholder platforms across Europe, which hinders conflict transformation and risks exacerbating distrust and participation fatigue among locals (Salvatori et al., 2020, 2021).

4.2 | Narrow metrics of success

A related problem is that frameworks such as the EU Habitats Directive oblige member states to continuously monitor and report their performance against measurable targets, including 'Favourable Conservation Status' of species (Trouwborst, 2017). These targets and indicators are generally separate from and often contradictory to those meant to safeguard Indigenous and local knowledge and cultures, which are usually more discrete and have less legal sway (Orr, 1996; Sjölander-Lindqvist et al., 2020). For instance, carnivore abundance and livestock depredation are relatively easy to

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measure and so become indicators of successful coexistence. What type of coexistence 'makes local sense' (Holmes et al., 2022), the knock-on effects on the bio-cultural system (Gippoliti et al., 2018) or feelings of lack of control, stress, fear and grief (Akampurira & Marijnen, 2024; Gieser & von Essen, 2021), are aspects that are usually left out, leading to a partial representation of the challenges and their possible solutions (Nori & Scoones, 2019).

4.3 | Aligning different scales

Managing carnivores in pastoral areas is inherently complex, with damages and benefits incurred over different spatio-temporal scales by different groups of people and wildlife (Pooley et al., 2017, 2020). Slow LK tends to be limited in geographic scope, such as a specific valley. Meanwhile, carnivore territories often transcend administrative borders, requiring cross-scale monitoring and coordination for which science is uniquely placed to provide information, for example, through telemetry and DNA sampling (IUCN HWCCSG, 2023; Linnell, 2023). Deducing what knowledge is most relevant in a given situation can be challenging, particularly if contradictions emerge between LK and scientific/conservationists' knowledge. For example, some pastoralists consider the killing of 'misbehaving' predator individuals as the most effective way of communicating boundaries and resolving local livestock depredation (Meuret, 2021; Pettersson et al., 2023). This is often contrasted with ecological models, covering larger scales, which may indicate that lethal control displaces damage elsewhere (in time or space) (Kutal et al., 2023; Santiago-Avila et al., 2018). The issue is further confounded by contrasting ethical standpoints on the killing of carnivores (Allen et al., 2023; Von Essen & Redmalm, 2023), and the lack of equitable spaces in which to promote a shared understanding between the different parties (Papp et al., 2022).

5 | WAYS FORWARD—CENTRING PLACE

International frameworks have successively strengthened obligations to safeguard Indigenous and traditional knowledge, most recently in targets 21 and 22 of the Kunming-Montreal Global Biodiversity Framework (CBD, 2022), which also mandates efforts to minimise human–wildlife conflict (target 4). Yet, as evident from the previous section, the operationalisation of these targets is hampered by structural and legal barriers. As large carnivore populations continue to expand (Cimatti et al., 2021), efforts are needed to harmonise these targets within conservation strategies at all scales, especially when they concern high nature-value farming areas (Hinojosa et al., 2018; Scoones, 2023). It will require a transformation of funding and planning mechanisms to allow for 'biocultural design', whereby goals, metrics and indicators for coexistence are jointly designed to reflect local models of governance, knowledge and plural values (Carmenta et al., 2023; Davidson-Hunt et al., 2012; Papp et al., 2022). A priority area in the coming years is in the development of National Restoration Plans, as mandated by the new EU restoration law (European Commission, 2024).

The success of harmonising efforts hinges on the intermediary actors, institutions and processes that facilitate the transfer of information across levels of governance (Gaventa, 2021), build trust between social groups (Saif et al., 2022) and promote downward and upward accountability (Sjölander-Lindqvist et al., 2020). Building on Williams' work (2013, 2014, 2018), and taking inspiration from guardian programmes in various countries (see White, 2022), we argue that this requires *spacing* conservation management. This means shifting away from bringing LK up into policy spaces to a management approach anchored in place and local relations; in other words, not focusing on what knowledge *is* but on what it *enacts* on the ground (Ween & Riseth, 2011). Using place, such as a grazing system in a specific location, as and management unit facilitates the braiding of context-independent (e.g. scientific) and context-dependent (subjective, local) perspectives, producing a rich tapestry of its history, dynamism and possible future scenarios (see Molnár et al., 2020 for a practical example). It is achieved by providing equitable spaces in situ in which to jointly formulate questions, select methods, collect and analyse data, as well as share, reflect and learn from each other (Reed et al., 2023). These spaces can be organised through 'communities of practice' (see Hartel et al., 2019), where emplaced practitioners or mobile regional teams, who have well-established relationships with the local community and whose expertise cuts across knowledge systems, coordinate vertical and horizontal planes of relationships (Williams, 2013). This includes validating knowledge with locals, bringing grassroots perspectives up to national and regional levels, identifying capacity-building needs and translating policy into locally appropriate actions. This approach ensures meaningful participation and representation, as well as free, prior informed consent (FPIC) of local communities (Hill et al., 2020).

Recent initiatives have demonstrated the potential of the spacing approach. In Castile and Leon in Spain, a programme to mitigate human-derived wildfires (Plan 42, see Rada Sereno et al., n.d.) deployed practitioners in pastoral areas across the region, tasked with building networks for information exchange and planning. After 8 years of close collaboration within and between communities (2002–2010), fires had decreased significantly. While the programme ended, the established relationships persisted and yielded new initiatives, including a platform for human–wolf conflict mediation (GCG 2018). In Grosseto, Italy, a LIFE-funded project developed a successful protocol for adaptive co-development of wolf damage prevention measures (Marino et al., 2021; Salvatori et al., 2021, 2023). Reflecting on what worked, the managers emphasised the indispensable role of farmers in providing complementary knowledge on local system dynamics, especially on the conditions of their farms and their livestock's needs and behaviours. Both examples reflect what Williams (2013) calls 'epistemic betweenness', whereby scientific discourse and technical solutions are invigorated and adapted through collaboration with local communities.

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6 | CONCLUSION

In this perspective, we have responded to a need to clarify what local knowledge (LK) is in order to advance its recognition within conservation management. Using the case of pastoralism–carnivore interactions in Europe, we have illuminated a local-external continuum of relevant knowledge-holders, exemplified the contributions of LK to carnivore management and explained how emplaced practitioners are instrumental in the work of coordinating equitable sharing, braiding and co-production of knowledge between different scales and knowledge-systems.

In so doing, this perspective supports ongoing efforts to learn from and empower the cultural norms and systems of governance that underpin local pastoral systems, which in many areas continue to be the most sustainable way for people to live off the land while maintaining biodiversity. As carnivores continue to expand into these systems, the design of sensible and legitimate coexistence policies requires scientific knowledge of species ecology, movement patterns and ecosystem trends to be braided with LK on multi-species interactions, local dynamism, cultural heritage, values and needs. Determining whose knowledge is relevant or irrelevant, reliable or unreliable in different places and who is best placed to decide, is one of the most pressing challenges of conservation governance in the 21st century. Advances can be made by mainstreaming relational thinking and knowledge braiding in funding calls and building associated capacity among government institutions and NGOs, as they often lack the openness, tools and accountability to achieve equitable partnerships with locals.

Leveraging the recognition of Indigenous and local knowledge, this work should be guided by the four principles described by Hill et al. (2020): respecting rights; supporting care and mutuality; strengthening local knowledge and institutions; and supporting knowledge exchange. While this perspective discussed how this transition can be achieved in European pastoral landscapes, we suggest that the continuum approach to understanding and mapping knowledge and knowledge-holders (adjusted to the system in question) is broadly applicable within natural resource management and sustainability science. Whether it concerns carnivores, pastures, fisheries or forests, the key to success is to build on local stewardship and skills, adapting system management in ways that make sense to local people and that enable continuous adaptation and innovation in the face of change.

AUTHOR CONTRIBUTIONS

Hanna Pettersson instigated, drafted and coordinated the manuscript based on an initial workshop with Juliette Young, Lou Lécuyer and Simón Calla. Lou Lécuyer and Lindsay Stringer wrote sections of the manuscript. Juliette Young, Zsolt Molnár, Simon Calla and Erika Juhász provided ideas and feedback. All authors assisted in reviewing and editing the manuscript and approved the final version.

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The authors declare no conflict of interest. Zsolt Molnár is an Associate Editor and Hanna Pettersson and Juliette are guest editors for People and Nature, but were not involved in the peer review and decision-making process of this manuscript.

DATA AVAILABILITY STATEMENT

This manuscript does not include any data.

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