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Weaving everyday environmental heritage into modern conservation policy: Insights from Indigenous communities in northern Thailand

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Abstract

1. Signatories of global conservation treaties have pledged to support Indigenous peoples' rights and roles in maintaining biodiversity and ecosystems. Movements embracing biocultural concepts (e.g. Indigenous ecological knowledge, cultural ecosystem services) and governance approaches (e.g. sacred natural sites, biosphere reserves) have provided important impulses, but existing frameworks offer limited insight into the complex interplay between Indigenous communities, ecosystems, and conservation policy.
2. A complementary approach that centres the analysis on 'doing' biocultural heritage, the processes that constitute and unsettle it, and the broader context to which it connects can offer new pathways for informing conservation policy. This article introduces such an approach through the concept of everyday environmental heritage (EEH).
3. We define EEH as an inherently intangible and unstable *process* of producing and transmitting culture through artefacts, spaces and practices in a way that creates direct and indirect links to people's local ecosystems. Its main analytical value derives from (1) engaging with the communal processes and external contextual factors that shape contemporary heritage expressions; (2) interrogating their intrinsic value and instrumental functions; and (3) exploring the behavioural, social, and political systems to which they connect.

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4. We illustrate a subset of the possibilities of the EEH concept in an exploratory case study of forest management by Indigenous communities in northern Thailand. Data were collected using participatory ethnographic methods in two Pgaz K'Nyau (Karen) and two Hmong villages in Chiang Mai province from 03/2022 to 05/2024, which involved 75 Indigenous participants and eight community consultations.
5. Through inductive thematic analysis, we highlight three key manifestations of EEH: intrinsically valued practices without direct links to external conservation stakeholders, instrumental practices for contesting state conservation policies and land-use restrictions, and emerging practices with the potential to stabilise into one of the first two types. Local social and institutional networks were key to support EEH practices.
6. We discuss how varied expressions of EEH, their political antecedents, and their systemic consequents can help identify and promote sustainable and Indigenous-led conservation approaches. We conclude that future work should systematically explore conservation effect mechanisms and bottom-up policy design process models centred on the concept of EEH.

KEYWORDS
cultural ecosystem services, forests, heritage, Indigenous peoples, qualitative research, Thailand

1 | INTRODUCTION

Multilateral agreements including the United Nations (UN) Convention on Biological Diversity, UN Framework Convention on Climate Change, Nagoya Protocol, and World Heritage Convention increasingly recognise the vital roles of Indigenous peoples and customary institutions in maintaining biodiversity and ecosystem health. This growing policy recognition is backed by a large body of scientific evidence, which underscores the need for governance arrangements and mechanisms that support Indigenous peoples in environmental management and governance (Dawson et al., 2021, 2024; Estrada et al., 2022; Levis et al., 2024; O'Bryan et al., 2021; Simkins et al., 2024; Sze et al., 2022). For instance, Dawson et al. (2021, p. 10) reviewed 169 case studies concerned with land governance arrangements of Indigenous peoples and local communities (IPLCs), whereby externally controlled arrangements tended to 'to result in relatively ineffective conservation' compared to cases where IPLCs retained meaningful power over land governance.

Researchers and practitioners around the world have been exploring frameworks and guiding principles for supporting Indigenous peoples in environmental management and governance, which have built in particular on biocultural concepts and governance approaches that consider people and ecosystems as inextricably linked (see Section 2 for a detailed conceptual discussion). Such a linkage is commonly embedded in localised informal governance arrangements, for example under the notion of sacred landscapes or sacred natural sites, which are often linked to the 'defending' of terrestrial areas and which have gained increasing interest among conservationists and managers of protected areas (Tatay & Merino, 2023, p. 8). A more formalised governance approach that also acknowledges sacred sites as a key element for human–nature interactions is, for example, land area designation as biosphere reserves under the UNESCO Man and Biosphere Program, which aims at 'fostering the harmonious integration of people and nature for sustainable development' (Tatay & Merino, 2023; UNESCO, 2022, p. 23).

A key notion to inform the understanding of human–nature relationships in research and practice has been environmental or biocultural heritage, which is routinely found in research on traditional ecological knowledge/Indigenous knowledge (TEK/IK) systems, cultural ecosystem services (CES), and environmental cultural traits and practices (Corbera et al., 2024; Gavin et al., 2015; Levis et al., 2024; Reyes-Garcia et al., 2022; York, 2025). However, the interactions among Indigenous (and other local) communities, ecosystems, and conservation policy are complex and can exhibit patterns of resistance, exclusion, power struggles or political instrumentalization—with potentially unforeseen social and ecological consequences (Tatay & Merino, 2023; York, 2025). Existing applications of biocultural heritage in research as well as policy do not yet effectively capture these complex social dynamics, which can have an important bearing on how we conceptualise conservation policy and support Indigenous communities.

An approach that centres the analysis on heritage itself, the processes that constitute and unsettle it, and the social, political and behavioural systems to which it is connected, can complement

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existing conservation-oriented perspectives. In this article, we introduce and illustrate a complementary lens originating in cultural heritage studies to help identify conservation actions that can support and safeguard communities' visions of their future from the bottom-up: everyday environmental heritage (EEH). We define EEH here as an inherently intangible and unstable process of producing and transmitting culture through artefacts, spaces and practices in a way that creates direct and indirect links to people's local ecosystems (see Section 2 for a detailed characterisation). It complements existing applications of biocultural heritage in particular due to its explicitly processual, forward-oriented, and political character that underscores the inter-dependence (rather than mere dependence) between humans and their environment.

EEH intersects and overlaps with several related concepts such as TEK/IK and CES, but it retains its distinctive complementary value due to its specific analytical focus, in which manifestations of heritage are the principal unit of analysis and serve as an anchor for systematic enquiry into heterogenous cultural landscapes, the evolution of EEH, and its drivers, political antecedents, and systemic consequents. The relationships between these aspects can help—from a cultural studies and social science perspective—to understand interdependencies between humans and ecosystems mediated by EEH as communities actively negotiate and mobilise heritage practices in response to changing socio-ecological conditions and conservation governance (see Appendix S1: Section 1 for a detailed conceptual comparison between EEH, TEK/IK, CES and research on environmental cultural traits and practices; references to this literature are listed in the Data Sources).

The overarching aim of this study was to explore such a heritage-sensitive approach to complement culturally informed conservation research and policy. Achieving this aim comprehensively requires a multifaceted empirical, conceptual, and methodological research agenda, which we outline in this manuscript and the possibilities of which we illustrate through a case study exploring the research question 'What are common expressions of EEH and their relationship to forest preservation?' The case study involved ethnographic and participatory research situated in tropical forest landscapes of northern Thailand.

2 | BACKGROUND

2.1 | Everyday environmental heritage and its links to conservation

Our conceptualisation of EEH originates in cultural studies of heritage. This field has made considerable advances in recent decades to recognise intangible aspects of cultural heritage (Smith, 2006, 2017), its intrinsic connections to biodiversity and sustainable development (Auclair, 2018; Gavin et al., 2015; Lindholm & Ekblom, 2019), and people's lived experience of heritage (Bonnin & Moore-Cherry, 2023; Coles et al., 2013). The sub-field of everyday or ordinary heritage has expanded especially rapidly since the 2010s (see Ireland et al., 2024; Raccomandato & Radermecker, 2026, for recent reviews). Albeit featuring primarily applications in urban settings from high-income country contexts, this sub-field encapsulates an array of recurrent themes that help trace the conceptual roots of EEH (and which we expand on in the remainder of this section), including: the role of everyday heritage in place-making and attachment (Mosler, 2019), the integration of heritage in people's everyday life (Bonnin & Moore-Cherry, 2023), local definitions of heritage that need not conform with established expert consensus (Giombini, 2020), and the transformative and decolonial approaches involved in the collective negotiation of heritage (Auclair & Garcia, 2021; Belova & Schofield, 2022; Ireland et al., 2024). While the everyday heritage typically adopts the notion of 'conservation' in relation to the preservation of heritage practices (Ireland et al., 2024), the conservation literature has also incorporated the notion of heritage and explored its role in protected area and ecosystem management (Azzopardi et al., 2023; Bridgewater & Rotherham, 2019; Fernández-Llamazares et al., 2021; Hølleland et al., 2017; Lindholm & Ekblom, 2019).

In broad terms, everyday or 'ordinary' heritage involves an inherently intangible and unstable *process* of producing and transmitting culture through artefacts, spaces and practices—'whether physically significant or emotionally and symbolically important' (Auclair & Fairclough, 2015, p. 3; Smith, 2006). Likewise, everyday heritage involves ongoing political negotiation by communities about concrete cultural expressions that community members value and that link the past, present, and future by 'mak[ing] us who we are, colour[ing] how we interact, and shap[ing] the futures that we can envisage and might create' (Auclair & Fairclough, 2015, p. 4). This process evokes associations, individual and collective memories, and narratives, and we can observe its outcomes as both tangible and intangible manifestations of culture.

The 'everyday' dimension reflects that this process is ongoing and weaved into communities' daily lives, which gives rise to ordinary and potentially mundane yet locally valued and meaningful practices and processes that reproduce a community's sense of belonging (Berkes, 2018; Hall & Holmes, 2020; York, 2025). 'Everyday' therefore does not mean that these practices need to occur daily. As they are all subject to the same underlying political negotiation process of what constitutes the fabric of a community's heritage, everyday heritage practices have varied and dynamically changing expressions, for instance as ordinary protective charms, architectural features, ad hoc prayers or even potentially large festivals (Bonnin & Moore-Cherry, 2023).

The 'environmental' dimension of everyday heritage reflects aspects of heritage practices that are tied to physical or perceived environmental surroundings and can include physical components of heritage practices (e.g. natural materials used in heritage practices), places where practice takes place, in-/tangible objects of these practices (e.g. practices directed at natural deities, or practices that convey environmental values), or otherwise practices that create a 'sense of belonging and attachment' towards the natural environment (Azzopardi et al., 2023). The everyday dimension of EEH helps capture contemporary cultural considerations related to rapidly changing socio-ecological contexts (Georgiadis, 2022) and the changing

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ways in which landscapes are understood, used, valued, and represented within modern market-based economies (Leepreecha, 2016; Youdelis, 2013). In such cases, EEH is by definition considered as intrinsically valuable by a community (i.e. a community decides what it values), but it can also fulfil additional functions that for instance respond to environment-related threats to community survival, livelihood and dignity (Haenssgen et al., 2023).

2.2 | Operationalising the concept for heritage-sensitive research

EEH-centred enquiry is consistent with a transformative social-justice-oriented research approach as it is founded on three fundamental principles: it is (1) place-based, (2) people-centred, and (3) embraces a local democracy approach (Auclair, 2018). The people-centred process foregrounds people's understanding, uses, and transmission of heritage, which follows global policy texts on heritage such as the 2005 Faro Convention that have moved away from considering 'heritage' merely as a collection of assets to preserve and towards their value for human lives (Auclair & Fairclough, 2015; Council of Europe, 2005; Raccomandato & Radermecker, 2026). This principle makes EEH a crucial lever for social inclusion and environmental preservation. The second principle emphasises that everyday heritage fosters attachment, sense of place, and sense of belonging among people in specific local contexts (Auclair & Fairclough, 2015). The third principle understands everyday heritage as an approach for fostering citizenship and engagement with place and the local environment. As such, it revolves around inclusion and enabling conditions for the participation of individuals and communities in defining their heritage (Auclair & Fairclough, 2015).

Key domains of EEH include its local manifestations, their political antecedents, and their systemic consequents, each of which adds an important analytical lens to the study of biocultural heritage and conservation practice (summarised in Figure 1; see Table 1 for a detailed description of components and their analytical elements; note that EEH research would not necessarily address all these aspects simultaneously). The first core concept (political antecedents) concerns the explicit as well as tacit 'negotiation' process in which communities continuously identify, interpret, and re-imagine collectively valued cultural practices, routines, places and artefacts worth preserving. This process can be studied with a focus on the transmission of social memory, but it is also subject to the influence of specific actors, their constellation and dynamics of power and exclusion, which are critical to understanding the evolution of heritage and its contestation within and across communities.

Tangible and intangible manifestations of heritage arise from this negotiation process and represent the second core concept in this framework. Research involving heritage manifestations is not limited to the description of cultural expressions and their constitutive elements; these merely help anchor further people-centred enquiry into:

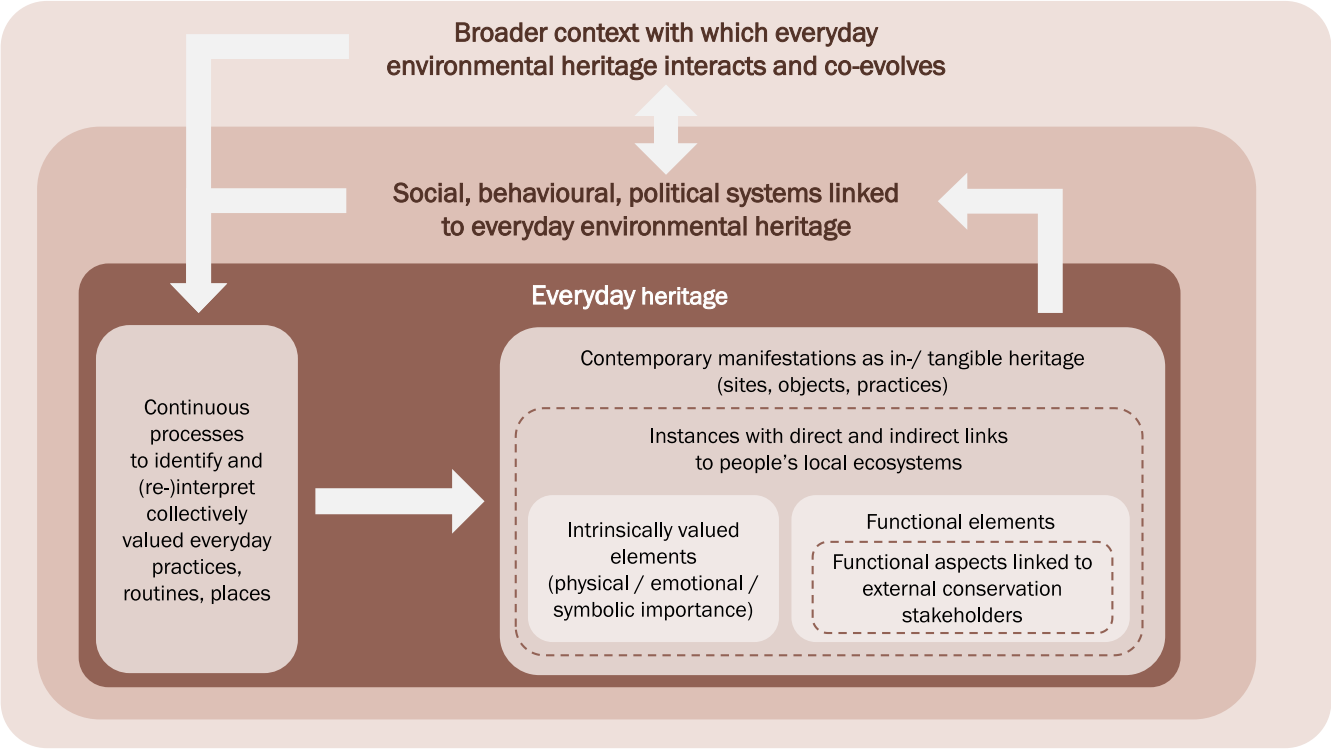


FIGURE 1 Conceptual framework of everyday environmental heritage. Arrows indicate direction of influence. Dashed lines indicate subset within same category. *Source*: Own elaboration.

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TABLE 1 Conceptual framework for analyses centred on everyday environmental heritage.

Conceptual component	Analytical element
1. Heritage manifestations Purpose: to identify and describe locally valued heritage sites, objects, practices (explicitly, or implicitly in terms that are consistent with the concept)	a. Provide a detailed account ('thick description') of the heritage instance, its background, and context: ○ Evolution: Emergence, modes and process of transmission, and historical adaptation, together with the actors and influences involved in this evolution ○ Constitutive elements: The activities, objects, places, situations, and people involved (and excluded) in the heritage instance ○ Interpretation and meaning: Varied understanding of, engagement with, and intrinsically valued elements of the heritage example among the diverse community b. Analyse the attributes that would qualify the instance as 'heritage': ○ Temporal linkage: How it connects past, present, and future (e.g. inherited from whom, what visions of the future are imagined) ○ Materiality: Its tangible and/or intangible elements ○ Social embeddedness: How it creates a sense of belonging & attachment to community, identity, and/or place
1.1. Environmental attributes Purpose: to assess how the heritage instance integrates into relationships between humans and ecosystems (in various ways that can also be potentially harmful for ecosystem health).	a. Modes of human-environment linkage: ○ Spiritual linkage (e.g. supernatural entities tied to land, water, forest, air) ○ Spatial embeddedness (e.g. situated within community forest) ○ Material dependency (e.g. natural resource use, construction inputs, ingredients, species) b. Ecosystem perception and attachment ○ Affective relations (e.g. 'sense of belonging and attachment' towards environmental spaces) ○ Landscape perception and engagement (e.g. landscape narratives, attitudes towards littering) ○ Environmental values (e.g. sense of appreciation for the forest) c. Transformation of human-ecosystem interface ○ Material transformations (e.g. natural resources becoming artefacts, clothing, medicines) ○ Embodied and identity-related transformations (e.g. how ecological elements shape health, appearance, or social identity) d. Ecological impacts associated with the heritage instance: ○ Positive and negative outcomes on ecosystem health (e.g. biodiversity, soil, water quality, fire risks) ○ Governance and transformation of ecosystem (e.g. conservation rituals, extractive practices)
1.2. Functional aspects of heritage Purpose: to explore and document systematically any instrumental functions and purposes that the heritage instance fulfils in the community.	a. Psychosocial and physical well-being functions: ○ Making sense of bad experiences or developments ○ Helping people find comfort after stressful and traumatic events ○ Staying healthy and/or performing care towards others (humans, non-human animals, ecosystem) b. Relational functions: ○ Reinforcing the connections and relationships between villagers ○ Networking and inter-community exchange ○ Opportunities for collective participation and interaction c. Knowledge and identity functions: ○ Learning/transmitting knowledge or skills ○ Preservation and (re-)construction of cultural identity d. Governance and resource management functions ○ Managing the local ecosystem or the use of natural resources ○ Establishing and signalling 'good' or desirable behaviour and values ○ Influencing local and national policy processes ○ Maintaining good relationships and engagement with external organisations
1.2.1 Subset of functional aspects with direct link to external conservation stakeholders Purpose: to analyse how the heritage instance operates as a political instrument in interactions with external conservation stakeholders (e.g. government bodies, non-governmental organisations, advocates).	*Note*: These functions are a subset of the overarching functional aspects but analysed in more depth. a. Identify externally oriented instrumental functions ○ Norm and value signalling: Demonstrating 'appropriate' community behaviour and values ○ Policy influence: Accessing, informing and shaping decision-making processes at different policy levels ○ Relationship management: Maintaining or negotiating links with external organisations (e.g. requesting assistance to acknowledge external stakeholders' role in local natural resource management) ○ Outreach: Helping outsiders understand the local way of life (e.g. inviting tourists or officials to the village to overcome stereotypes) ○ Asserting autonomy: Demonstrating independence and agency when managing natural resources ○ Collective action: Gathering bargaining power as a network or movement of like-minded people ○ Marketing: Reaching markets for sustainably produced agricultural products and crafts ○ Conflict resolution: Addressing disputes with external actors b. Describe stakeholder configuration and power relations ○ Identify the external stakeholders related to the heritage instance and explain their roles ○ Analyse how the heritage instance acts on relationships and power relations c. Examine the origins and drivers of these externally oriented functions ○ Endogenous drivers: intrinsic community priorities (e.g. identity expression), responses to internal tensions or governance challenges (e.g. communal water management) ○ External pressure: contextual developments, interventions, policies, or conflicts (e.g. enforcement of national park regulations)

(Continues)

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TABLE 1 (Continued)

Conceptual component	Analytical element
2. Antecedents ('Everyday' attributes) Purpose: to examine how the heritage instance becomes collectively valued through everyday life.	a. Process of recognition: What kind of negotiations and dynamics influenced its identification as collectively valued everyday practices, routines, places, artefacts that are deemed worth preserving for shared visions of the future? b. Actors and power relations: Describe for whom and why the heritage instance may be physically, emotionally, or symbolically important, and who may be main actors, power holders, and excluded groups in relation to it c. Narratives and social memory: Explore and document the associations, individual and collective memories, and narratives that the heritage instance evokes in the community d. Contestation: Document instances of contradiction and contestation in the narratives surrounding the heritage instance (incl. justifications why it may not be deemed 'heritage') across the diverse community
3. Consequents of heritage Purpose: To explore the social, behavioural, and political systems to which the heritage links (centred on EEH, meaning that it considers systemic influences on EEH as well as the influence of EEH on system elements). These systems can overlap and integrate, they can project outwards from communities, they can have a bearing on the dynamics of conservation practice, and they form part of the broader context that again influences the evolution of EEH.	*Note*: Owing to the complexity of systemic approaches, the collective consideration of a community's EEH landscape (rather than each individual instance) can facilitate this analytical step, informed by community and stakeholder perspectives. Cognate social science frameworks can be mobilised selectively depending on the relevant systems, conservation challenge, and research focus to support community and stakeholder perspectives with systematic and theory-guided enquiry. The illustrative list below considers elements of social, behavioural, and political systems that may variously be activated in such an analysis. a. Social systems: ◦ Social relations and institutions: How the heritage instance shapes interpersonal relationships, norms, and formal/informal institutions ◦ Cohesion, inequality, and conflict: Implications for social cohesion, inclusion/exclusion, marginalisation, and conflict across social groups ◦ Identity and memory: Contributions to identity formation and negotiation, intergenerational relations, and collective memory transmission ◦ Livelihoods and well-being: Role of the heritage instance within broader livelihood strategies and experiences of human security, vulnerability, and dignity b. Behavioural systems: ◦ Behavioural patterns and practices: Everyday behaviours influenced by the heritage instance (e.g. resource use, cooperation, conservation practices such as fire clearing) ◦ Actor configurations: Presence and linkages between different actors (individuals, groups, institutions) within the behavioural landscape ◦ Mechanisms of behavioural influence: Processes through which behaviours are shaped and changed within social contexts (e.g. social learning, norms, incentives, sanctions, habit formation, ritualistic engagement) and that may encourage, limit, or redirect behavioural patterns and change ◦ Pathways and spillovers: Resulting network of pathways linking key behaviours to the heritage instance and to other domains (e.g. livelihoods, health, environmental management) c. Political systems: ◦ Governance and authority: Relationship of heritage instance to rule-making, legitimacy, and decision-making processes on various levels ◦ Stakeholder configurations: Structure of relevant actor landscape, their interests, positions, and influence in relation to key policy challenges ◦ Power and representation: Role of the heritage instance in power relations, including voice, influence, and recognition in governance domains ◦ Political mobilisation and contestation: Role of heritage instance in asserting claims, resisting oppression, negotiating autonomy, and other forms of political struggle, assertion of rights, and interactions with formal policies and state authorities on various levels

Note: Indicative elaboration based on foundational research in terrestrial ecosystems of tropical Southeast Asia. Participatory and community-led research in other settings, involving diverse knowledge systems and building on creative research tools may expand analytical focus.
Source: Own elaboration.

- The interpretation, meaning, and intrinsically valued elements of these manifestations among diverse communities.
- Those heritage instances that have direct and indirect linkages to people's local ecosystems; that is, EEH as a subset of everyday heritage (noting that EEH is not intrinsically pro-environmental; linkages with negative implications for ecosystem health may also exist and would not be excluded from the concept, e.g. if traditional fishing practices reinforce social ties and attachment to place while having evolved to use explosives or cyanide).
- The general functional aspects of EEH across various domains including psychosocial and physical well-being, relationality, knowledge and identity, and governance and resource management.
- The subset of functional aspects that place EEH explicitly in relation to external conservation stakeholders (e.g. government bodies, non-governmental organisations, advocates). Such political functions can range, for example, from norm and value signalling via relationship management and policy influence to conflict resolution and marketing—which need to be understood in relation to prevailing stakeholders and power configurations and to the drivers that gave rise to this instrumentalisation.

The third core concept is the systemic consequents that situate EEH within social, behavioural, and political systems, with which it co-evolves and which capture the interdependent relationship between humans and ecosystems. Social consequents trace how EEH shapes relationships, social institutions, and lives and well-being within and beyond the community. Behavioural consequents connect EEH to conservation-related patterns of action within a broader configuration of actors and mechanisms of behavioural influences

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at the human-environment interface. Political consequents concern how EEH intersects with governance processes, policy stakeholder landscapes, power constellations, and political processes and negotiation over representation and resources.

These social, behavioural, and political systems can overlap; they can project outwards from communities; they can have a bearing on the dynamics of conservation practice; and they form part of the broader context that again influences the evolution of EEH. However, as Figure 1 indicates, EEH is not an evaluation framework for these consequences, although it places explicit emphasis on outcomes on people's lives and lived realities. Cognate frameworks across the social sciences can be mobilised selectively depending on the relevant systems, conservation challenge, and research focus to support community and stakeholder perspectives with systematic and theory-guided enquiry (note that the application of these frameworks is not part of this article).

Research strategies building on the people-centred process and place-based approach of EEH require bottom-up methodologies that embrace localisation (as opposed to generalisation and external expert judgements) and lived experiences through 'the participation of the population and of local actors' (Auclair, 2018, p. 3). The local democracy approach of EEH further corresponds to transformative action research designs that would actively integrate researchers in the processes, involvement, and enabling conditions for the participation of individuals and communities in defining their heritage (Auclair & Fairclough, 2015). Strategies of enquiry would accordingly draw on insights and reflections of diverse members from local populations, using multi-scalar research that involves individuals, groups and communities engaging with instances of EEH, from which also regional and global as well as transversal connections across sectors can be charted. The primary unit of analysis is the heritage instance (or 'heritage manifestation'), which would be aggregated into an EEH landscape to explore the interdependencies and co-evolution between humans and ecosystems. The temporal scope involves contemporary assessments of heritage and its antecedents and consequents, but it also requires diachronic perspectives that trace the emergence, transmission and transformation of heritage practices over time (incl. moments of disruption, reinterpretation or decline). As EEH is a bridge between past, present and future, temporal aspects should also acknowledge and capture how people's visions of the future are transported through EEH.

A typical starting point for a research strategy would be the identification of locally valued heritage sites, objects, or practices that are recognised as such explicitly or implicitly in terms that are consistent with the concept (see Sunanlikanon et al., 2026, for methodological guidance and a field manual). Following a deeply contextualised 'thick' description of individual EEH instances and their characteristics (heritage attributes, environmental attributes, functional aspects), the research strategy would then explore and engage with the political antecedents and the changes of the heritage instances over time (including contextual drivers that would later be explored systematically as EEH's systemic consequents), as well as with issues of power, representation, and contestation. In transformative research, this would involve ongoing conversations with the concerned population groups about the recognition of heritage and situations of injustice or exclusion therein. In a next step, aggregation at the level of the EEH landscape can support the analysis of systemic consequents, including social dynamics, behavioural systems and political processes that are influenced by EEH but that cannot be fully captured through isolated cases.

At the same time, it is important to stress that EEH practices are intrinsically valued, but that does not mean that their expressions or ensuing strategies are necessarily equitable or effective from an ecosystem management perspective (e.g. if they create challenging social dynamics like gender-based exclusion or peer pressure). A recent review by York (2025, p. 6) noted in this context that, 'the biocultural diversity literature may have romanticized the links between Indigenous Peoples and biocultural diversity conservation to an extent, overlooking associated struggles or tensions'. EEH-centred analyses would explore these struggles and tensions as part of the behavioural, social and political systems to which heritage practices connect.

3 | MATERIALS AND METHODS

This study illustrates elements of the broader concept of EEH by exploring locally valued environmental cultural expressions that correspond to EEH, and which link to broader behavioural, social and political systems. Given the exploratory nature of this research and the high diversity of cultural practices both within and across Indigenous communities, we employed a case study research design using ethnographic and participatory research tools in four diverse study sites and with reference to the human security threats that they had been experiencing (Haenssgen, 2020; Haenssgen, Leepreecha, Sakboon, & Chu, 2026; Yin, 2003). While the resulting empirical material illustrates the character of different typologies of EEH in the local context, related work from this research agenda has also explored measures to actively support EEH and its linkages to communities' economic livelihood, psychological well-being, social capital and engagement with local ecosystems (Haenssgen, Sunanlikanon, Leepreecha, Sakboon, Kijdumnern, et al., 2026; Haenssgen, Sunanlikanon, Leepreecha, Sakboon, Petkoff, et al., 2026).

3.1 | Case context: Political ecology in northern Thailand

In Thailand, where this study was situated, 44.9% of the national territory has been designated as areas in which forest law such as logging restrictions applies, and Thailand's protected area of more than 100,000 km^2 (18.6% of lands) was larger than any other country in mainland Southeast Asia (in absolute terms; UNEP-WCMC, 2021; Yasmi et al., 2017). However, the path towards forest conservation (the latest iteration being the 2019 National Park Act) has fuelled a vicious cycle of environmental deterioration and ever more

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restrictive and militarised conservation policy responses. For example, in 2014, when the military government seized power, it issued a forestry master plan that problematised forest loss with notions like the 'invasion' of state land ('การบุกรุกที่ดินของรัฐ') or the 'rightful' return of allegedly borrowed forest space ('วงคนืผนืป่า') by Indigenous peoples (ISOC, 2014). Nearly 18,000 cases of 'illegal forest trespassing' had afterwards been recorded in the period from 2015 to 2019 (RFD, 2021), and Indigenous peoples have been driven out of forest areas—requiring them to work remaining lands ever more intensively (Riwthong et al., 2015; Siriphon, 2006; Trébuil et al., 2006; Walker, 2003). Subsequent democratically elected governments have continued this policy trajectory. Although the recent enactment of the 2025 Law on the Protection and Promotion of the Way of Life of Ethnic Groups has promised a new mechanism for the recognition of cultural expressions of Indigenous peoples in Thailand, the legal text does not recognise the notion 'Indigenous' (rather: 'ethnic groups') on grounds of national security, and any potential recognition of special cultural zones would remain subordinate to measures to protect conservation areas under the 2019 National Park Act (Haenssgen, Sunanlikanon, Leepreecha, Sakboon, Petkoff, et al., 2026).

In this problematic conservation context, Indigenous peoples in Thailand have experienced discrimination and state oppression but have also strategically engaged in activities to expand their recognition and to utilise their environmental heritage practices for forest conservation. Among the diverse Indigenous communities in Thailand, major groups included Karen, Hmong, Lahu, Akha and Lua (Department of Social Development and Welfare, 2016). The Thai government historically had not devoted much attention to Indigenous groups, but after the arrival of the Cold War in upper mainland Southeast Asia in 1959, it started articulating 'hill tribe problems' such as threats to national security, opium cultivation, deforestation and poverty and underdevelopment (Leepreecha, 2019; Siriphon, 2006). Only in recent years have perceptions started shifting as the international and national discourse redefined the previous 'hill tribes' as Indigenous people with distinct heritage and rights (Leepreecha, 2019; Morton & Baird, 2019). At the same time, systemic discrimination and rural development did not detach Indigenous communities from their local ecosystems as they have continued to cultivate symbolic practices and rituals in relation to the land surrounding them. The strategic and instrumental use of heritage in the context of forest conservation has been documented in isolated cases (Haenssgen et al., 2023; Isager & Ivarsson, 2002; Morris, 2002). The persistent conservation challenges in Thailand alongside its diverse Indigenous communities therefore offered strong potential for a study to characterise various types of EEH and their relationship to forests.

3.2 | Study sites

The specific case study sites were part of a long-term research agenda and were originally invited to participate in order to include an ethnically and socio-economically diverse group of case studies covering the two largest Indigenous groups in Northern Thailand (Hmong and Pgaz K'Nyau). Guided by local and Indigenous scholars with 30 years' research experience in Northern Thailand, the resulting selection included an affluent tourism village, a village dominated by cash crop agriculture, a market-integrated remote village, and a remote community practising animism (see map in Figure 2 for a site overview). Specifically, Soplan village was a remotely located Pgaz K'Nyau community of 30 households (107 population) within a national park. Soplan maintained its majority animist religious practices and was one of the few highland communities that continued subsistence rotational agriculture. Mae Yang Ha village was also a Pgaz K'Nyau community, but firmly integrated into the local agricultural product markets on the sub−/district and provincial level owing to its well-established highland road connection and early adoption of cash crop marketing since the 1980s. Its 285 households (825 population) resided in a valley adjacent to a national park and comprised a majority Christian population. Mae Sa Mai village was an agriculture-oriented Hmong village with 184 households (1083 population) adjacent to a national park (together with its adjacent community, the complete settlement comprised 373 households and 2122 population). The village has been transitioning from intensive cash crop agriculture to tourism business, but also reactivated traditional rites and practices to negotiate forest conservation with the state. Lastly, Nong Hoi Kao was a tourism-oriented Hmong community with 343 households (1380 population) located in a forest reservation area. The affluent village was a popular tourism destination in the nationally renowned 'Mon Jam' area, but conflicts with national park authorities remained persistent and problematic.

3.3 | Data collection and analysis

Ethnographic research within the case study research design involved a set of complementary techniques that built on the three principles of EEH research and included informal conversations with villagers, villager-led explanations of heritage and environments, semi-structured interviews, participant observation and community consultations (convened and led by the study team) (Levy & Hollan, 2015; Musante (DeWalt), 2015; Rose, 2020; Schensul et al., 2015). Information from all these activities was synthesised and recorded with the help of an ethnographic observation guide. The guide took the form of a structured documentation outline covering six parts (see Appendix S1: Section 2 for the full guide), with specific focus on the conceptual aspects of heritage manifestations. This choice stemmed from the focus of the current research project within a broader EEH research agenda and meant that we operationalised especially concepts 1–1.2.1 in Table 1 (rather than exploring in depth e.g. collective negotiation process or social and ecological consequences).

To implement the data collection, the ethnographers residing in the community were guided by a community-based research assistant and villagers to nominate potential manifestations of EEH in the villagers' view, and then followed the observation guide to ascertain if the nominated example fits the criteria of EEH (Parts 1–3) and the varied functions it may fulfil in the community (Parts 4–6). To contextualise the practical significance of the EEH practice in the

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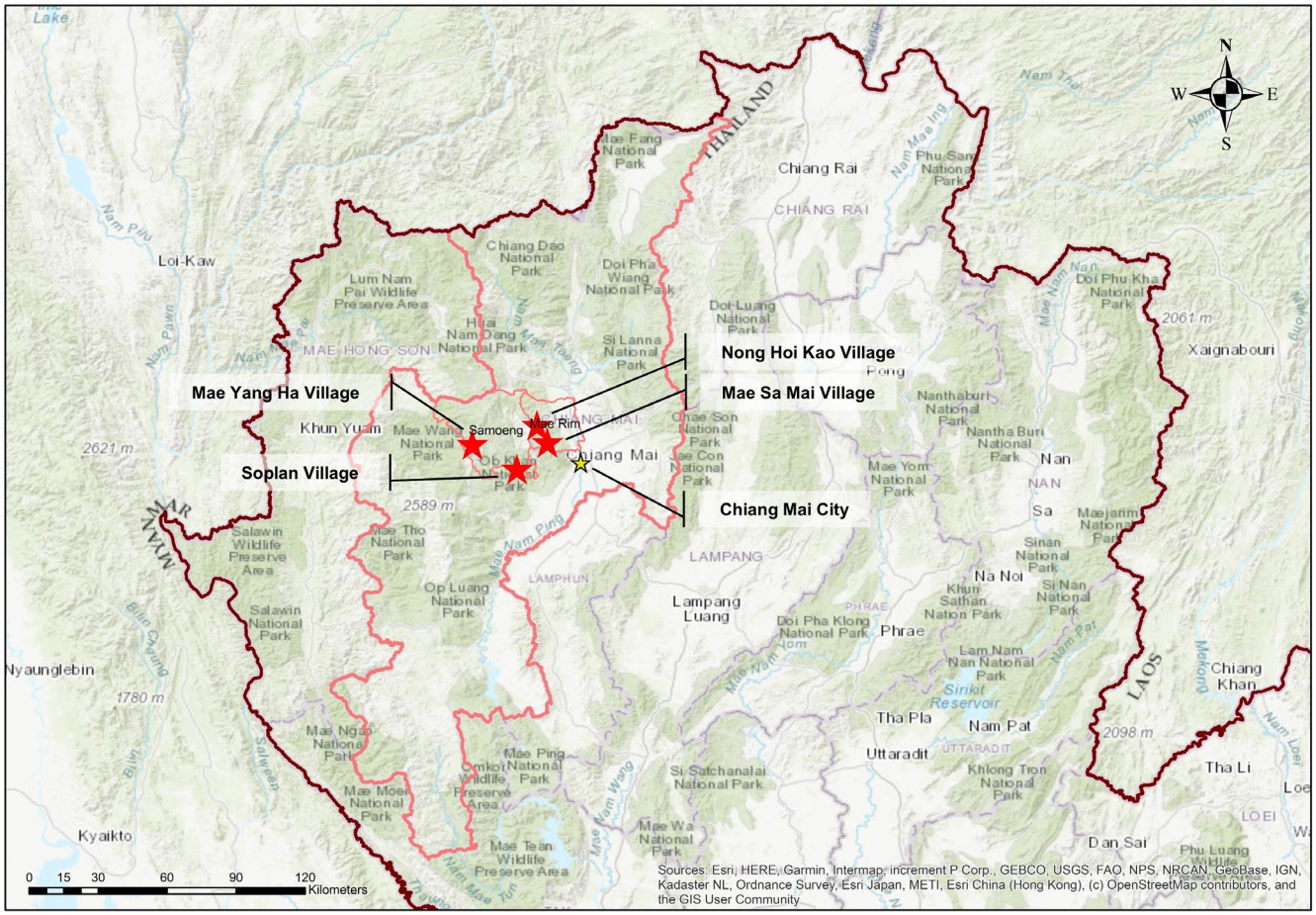


FIGURE 2 Research sites in Chiang Mai Province, northern Thailand. Yellow star indicates provincial capital of Chiang Mai, red stars indicate village research sites. Relevant district boundaries and names indicated. *Source*: Authors, produced with ArcGIS 10.5.1 (Esri, 2019) with administrative boundary data from United Nations Office for the Coordination of Humanitarian Affairs Regional Office for Asia and the Pacific (2021).

community, the final Part 6 drew on a cognate framework and involved reflections on the role of EEH in light of the human security threats that the community had been experiencing—and responding to—in terms of 'people's *survival* (physical abuse, violence, persecution or death), their *livelihoods* (unemployment, food insecurity, pandemics, etc.), and their *dignity* (lack of human rights, inequality, exclusion, discrimination, etc.)' (Tadjbakhsh, 2014, p. 44).

Data collection took place between March 2022 and May 2024, during which time we carried out 6 weeks of ethnographic fieldwork in each community with 75 participants involved directly (March–May 2022 and January–February 2024), and conducted eight community consultations (November 2022 and May 2024).[1] The directly involved participants included a share of 42% female respondents and an age range from 20 to 73 years. The consultations included a total of 60 participants with 62% female participants, which were attended and chaired by male community leaders but facilitated by the mixed-gender research team to encourage participation from women as well as men.

The data collection was supported by Hmong, Pgaz K'Nyau and Thai research assistants who lived in or had previously worked in the study sites (50% female) plus locally recruited community-based research assistants (75% female), thus enabling respondents to share their insights in their native Hmong/Pgaz K'Nyau tongue aside from Thai language in which most of them were fluent. This was only occasionally the case, for example when describing herbs in the local languages or among older participants who felt more comfortable speaking their first language, but their responses could be understood by the research team members without additional translation assistance.

The primary qualitative data were recorded and maintained in a report format using the documentation outline for each instance of EEH across the four study communities, supported by quotes and photographs from the participant observation (photographs of individuals were only taken with prior informed consent and presented in dissemination only if this was permitted by the participant; additional visual illustration from the case study sites was provided by the *Nurturing Lives in the Forest* documentary by Nontawat

[1]Noting that our presence in the communities did not cover a full year cycle while being conscious that seasonal change has an important influence on environmental cultural practices, later research stages reported elsewhere developed an annual calendar of cultural events in collaboration with the communities.

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Numbenchapol with permission—see https://youtu.be/IHRXo_ORGPo?si=dejAuRsEL7yoy35n). While the data collection itself took place in Hmong, Pgaz K'Nyau and Thai languages, the reports were written in English by the multi-lingual research team with Thai and local language supplements for specific terms or expressions.

Our analytical approach involved the structured review and case-by-case comparison of each documented instance of EEH (the unit of analysis) and their individual elements for a categorisation and a systematic understanding of their functions in line with the conceptual framework in Section 2.2 (Yin, 2003). The process involved four steps. In the first step, the ethnographic observation guides were pre-structured according to the conceptual characteristics of EEH to allow a deductive characterisation of each heritage example (drawing on Parts 1–3 of the ethnographic observation guide). This included the coding of key attributes such as temporal and material dimensions, social embeddedness, processes of collective recognition and forms of human–ecosystem linkage. Following the listing of EEH examples across the communities, material from Parts 4–6 of the observation guides was used in the second step for inductive thematic analysis to categorise the various types of EEH (i.e. inductive coding of functional aspects and context complementing the deductive part of the codebook). The process took place with the study team (including Indigenous and Western scholars as well as the ethnographic research assistants) and was led by the postdoctoral researcher supervising the research team (NS) and the principal investigator (MJH).

In the third step, the study team jointly considered the entirety of the coded documentation reports in their physical form in a 4-h data analysis workshop (led by senior Indigenous scholar-activist PL, and attended by all Chiang-Mai based researchers and the ethnographic research assistants) to consider common traits and distinguishing characteristics across all documented heritage instances. This step resulted in the identification of four overarching themes across the reports, comprising three distinct types of heritage together with the significance of enabling networks as a fourth theme (see Results section; note that the notion of 'networks' was a theme derived from the data, not a type of analysis such as social network analysis). The classification of EEH types was based on recurring combinations of attributes and functions, in particular the extent to which practices were (i) intrinsically valued and embedded in everyday life, (ii) mobilised instrumentally in relation to external conservation stakeholders, or (iii) emergent and not yet fully stabilised as recognised heritage. The workshop format thereby allowed discussion and joint interpretation of the research materials among the multi-lingual and interdisciplinary study team to arrive at a consensus outcome under the guidance of PL without major disagreements.

In the fourth step, the interim findings from the workshop were reported back to the communities for further discussion and validation (led by the ethnographic research assistants), which refined the allocation of categories, underlined the recognition of heritage practices in the communities, and hinted at practices to be reconsidered or explored in the second wave of data collection. The second round followed the same process, meaning that two rounds of deductive and inductive coding, comparative thematic analysis, and community consideration of the interim results took place. In total, 26 documentation reports were produced and analysed.

3.4 | Engagement and inclusion of indigenous communities

Our study team adhered to a range of principles for good practice towards local participation of Indigenous communities in conservation research (Newing et al., 2024). Aside from co-authoring this paper with Indigenous scholar-activists and Indigenous researchers from Hmong and Pgaz K'Nyau communities in Thailand, the broader research also involved work and consultations with the Indigenous highland communities on the basis of longstanding collaborative relationships with the research team (in some cases approximately 30 years). While data collection involved collaboration with villagers as research assistants, we subsequently shared and discussed the significance of the findings with the communities and produced local-language infographic banners for the communities to own. Public engagement work further involved a policy conference in 2022 with villagers, artists, scholars, and policy stakeholders (incl. the Royal Forest Department), the production of the 45-min documentary *Nurturing Lives in the Forest*, the recording of diverse villagers' viewpoints on everyday environmental heritage for a policy-oriented information video, and a public event and roundtable discussion with Thai members of parliament in which this video was shared. Subsequent project phases were formally guided by an Indigenous Advisory Board with four members including Indigenous community representatives, scholars, and activists. Further details of our participatory approach are documented in Table 2.

The study received ethical approval from the University of Warwick Humanities and Social Sciences Research Ethics Committee (Ref. HSSREC 65/19-20 AM02 and 71/23-24). With existing ethical approvals from the University of Warwick, the Chiang Mai University Research Ethics Committee waived local ethical approval in light so as to avoid duplication of work in accordance with its ethical review policy. We confirm that research was performed in accordance with relevant professional guidelines, ethical approvals, and regulations, that local permissions to conduct research were obtained from authorities and community leaders, and that informed consent was obtained from all participants. Informed consent for publication of images was obtained from all depicted individuals.

4 | RESULTS

From the inductive analysis and community consultation process over two research waves, we identified three overarching types of EEH supported by local social and institutional networks that contributed to the cultivation and diffusion of EEH practices. Type 1: EEH manifestations but without direct links to external conservation stakeholders; Type 2: EEH manifestations that are mobilised to contest state conservation policies and land use restrictions; and Type 3: Emerging

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TABLE 2 Application of principles for good practice towards local participation in conservation research.

Type	Research process stage	Principle	Application in this study
Process considerations	Problem definition	1. Tailor your initial approach to participation according to your familiarity with the field site and practical / institutional constraints	Research team had maintained connections to study communities between three and 30 years prior to the study begin; selection of four case study sites to balance depth of insight with diversity of community settings
	Proposal development & methodology	2. Engage with IPs & LCs as early as possible, and be flexible	Continuity with previous research projects in the same study sites with repeated consultations and engagement activities (including policy conference in August 2022) in which they (a) reiterated their request for assistance from scholars for their conservation activities and negotiation with state authorities, and (b) highlighted need for emphasis on cultural practice
		3. Seek to build on traditional knowledge and worldviews	Research focus on heritage informed by prior research in study sites and community calls for expansion of cultural evidence to support conservation action; research guided and informed by Indigenous scholars in study team and research assistants recruited from each community
	Data collection and analysis	4. Design sampling according to locally recognised social units	Ethnographic and participatory case study research design to follow lead of local community members in four case study sites to identify everyday environmental heritage practices; purposive sampling of participating villagers to attain diversity of views
		5. Match methodology to the expected level of participation and revise as necessary in discussion with IPs & LCs	Iteration of ethnographic (participant-led) research and community consultations to ensure local definition and grounding of heritage practices
		6. Balance the benefits of quantitative methods against those of more qualitative or transdisciplinary methods	As above—exploratory research approach not suitable for structured and closed-ended quantitative methods
	Dissemination	7. Include a description of participation across the whole research process in the write-up	Statement on inclusion incorporated as declaration alongside methodological elaborations
	Application of knowledge	8. Agree on an exit or follow-up strategy with IPs & LCs	No intervention but continued consultations to gauge community views; individual participants and communities free to withdraw anytime; follow-on research with heritage support (reported elsewhere) involved explicit exit option
Ethical considerations	Cross-cutting across research process	9. Explore the role that IPs & LCs play in conservation with an open mind through reflexive practices	Study focus on conservation-related cultural practices through lens of everyday environmental heritage; prior qualitative research and literature searches as starting point for consideration of practices but selection of heritage instances guided by local residents
		10. Open space for participation throughout the research process, acknowledging and working to reduce power imbalances	Several alternating waves of data collection and consultations to gauge research findings throughout and beyond this research project, with sensitivity to and active involvement of voices of less vocal groups (e.g. female participation in community consultations and heritage practices) Parallel public engagement work opened further channels of participation through a 2022 policy conference with villagers, artists, scholars, and policy stakeholders (incl. the Royal Forest Department), production of the 45-min documentary *Nurturing Lives in the Forest* (by Nontawat Numbenchapol), recording of diverse villagers' viewpoints on everyday environmental heritage for a policy-oriented information video (incl. voices to '*come and see*' their heritage practices), and public event and roundtable discussion with Thai members of parliament where policy video was shared

(Continues)

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TABLE 2 (Continued)

Type	Research process stage	Principle	Application in this study
		11. Explore conflicts of interest, their drivers and potential solutions jointly with IPs & LCs	Process-orientation of everyday environmental heritage helped explore shared and diverging understandings of what is deemed environmental heritage in each community—for example along age, gender, economic activity
		12. Respect the right to give or withhold free, prior and informed consent at all stages of the research process	Prior informed consent was requested prior to each data collection phase (within as well as before and after this specific project) and all participants were explicitly instructed that they were free to withdraw from the study anytime
		13. Engage with local people collectively and individually	Data collection involved individual interactions in ethnographic fieldwork as well as collective fora for exchange with broader group of community members to share and discuss the significance of findings with communities; inclusiveness supported through local-language infographic banners
		14. Respect individual and collective intellectual property rights related to traditional knowledge	Gauged protection of heritage practices with community members individually and in community consultations (e.g. Hmong family rituals were being shared by villagers in order to preserve them but their practice is strictly limited to family members); findings and materials shared with communities for them own (e.g. infographic posters, which communities subsequently displayed in village halls and other heritage events)

Source: Own elaboration, based on Newing et al. (2024).

or rapidly changing practices that have the potential to stabilise into Type 1 or 2. Table 3 summarises these manifestations, which emerged variously across the study sites. The fluidity of the examples underlined that the classification criteria applied to heritage manifestations on the community level: some were shared across all four sites (e.g. firebreak clearing), some had different political expressions (e.g. *Dei pau htoof* in Mae Yang Ha losing its political significance for external conservation stakeholders but remaining an active element in negotiations with state officials in Soplan), and some practices were present in several villages but not universally recognised as EEH (e.g. tree ordination was not recognised as heritage in Nong Hoi Kao, and members within the communities did not uniformly see e.g. firebreak clearing as their heritage). Every community could therefore maintain its own specific configuration of the EEH landscape.

4.1 | Everyday environmental heritage Type 1: Without direct links to external conservation stakeholders

The first and most common expression of EEH involved practices that were intrinsically meaningful to communities while they created explicit or tacit connections to local ecosystems. The distinguishing aspect relative to Type 2 below was that Type 1 forms of EEH were not, or no longer, directed at external environmental conservation stakeholders. This does not mean that they were apolitical; EEH is by definition a political process, and its practices may also be directed towards other stakeholders, for example in the case of signalling Indigenous identity through apparel.

Isolated cultural manifestations of such heritage practices are often already well documented in studies on environmental cultural traits and practices. However, this part of the documentation is essential as these EEH practices form an important and often less visible component of the diverse local cultural landscape, while the analytical perspective connects EEH practices to broader socio-political systems as well as to negotiation processes that bridge past, present, and future. One such example was indigo, which was used as a dye and medicinal plant in the Hmong villages (see e.g. Bouapao, 2003; Craig, 2010; Turner, 2012, for related literature), and which helps illustrate key characteristics of the EEH concept.

The indigo plant cultivated in Thailand belongs to the species *strobilanthes flaccidifolius* (Balfour-Paul, 1998), and it and its blue dye are known in Hmong as 'kang' (literal meaning 'dark blue'). As explained by the villagers, producing dye from the indigo plant was led by women, whereas men would only assist in selected laborious process steps like making wooden barrels and extracting limestone. The traditional process involved the cultivation of indigo in dedicated plots, storing and fermenting the harvested plants in a wooden barrel to produce the indigo pastes ('teng' in Hmong), and the subsequent production of the dye with ash and alcohol (which are mixed and whisked until the indigo comes to 'life' by producing foams, followed by oxygenation). Textiles would repeatedly be dipped into the resulting liquid and dried until they acquired a rich dark blue hue. Aside from dyeing clothes, the medicinal use of indigo was embraced by older generations of villagers to cure, in their view, a common cold by regulating the body's temperature.

The uses of indigo in the Hmong communities strongly reflected the key characteristics of EEH: Firstly, its environmental links

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TABLE 3 Expressions of everyday environmental heritage across case study sites.

EEH type	Soplan	Mae Yang Ha	Mae Sa Mai	Nong Hoi Kao
Type 1: without direct links to external conservation stakeholders		Changing and disappearing nature *Dei pau htoof* (umbilical cord tree) as it is replaced by Bible verses on boards attached to trees *Strawberry cultivation* (practice and festivals)	*Indigo* and its varying uses in Mae Sa Mai and Nong Hoi Kao for medicinal purposes (all ages and genders, but only a sub-segment of the village population) and for clothes (see below)	
	Weaving and dyeing among women's groups in all 4 villages (but with exception that apparel may be strategically mobilised to signal Indigenous identity during protests)			
Type 2: to contest state conservation policies and land-use restrictions	*Tree ordination* to evidence community commitment to forest preservation *Dei pau htoof* and its involvement in negotiations with national park officers	*Tree planting ceremony* and *water source cleaning day* as two activities that happen during rainy season and that apply Biblical teaching *Coffee cultivation* to showcase agroecological production while promoting Indigenous identity and everyday environmental heritage to outsiders		Firebreak coincides with *paying the water guardian spirit* (a showcase ritual) for environmental (timing), logistical (food), and political (land use) reasons
	Rotational agriculture is often object of external contestation and subject of negotiations, but also leveraged with non-state stakeholders such as academics to demonstrate environmental sustainability, and it is partly mobilised to showcase environmental ways of life to public		*Hemp* as a variously political and social form of heritage *Ntoo xeeb* (Tong Seng) tree is inhabited by the forest deity thwvtim and marks the centre of the community forest and site of Hmong new year festivities	
Type 3: Emerging and dynamically changing		Young people returning from urban education implement environmental initiatives, esp. the '*Dream Makers*' who shoot seed balls with traditional slingshots into the jungle		
	Firebreak clearing in all 4 villages as emerging in the 1990s but interweaving with other longer-standing cultural practices and increasingly being recognised as everyday environmental heritage *Landscape change* in all 4 villages—from the traditional landscape in Soplan, via the evolving agricultural landscapes and mixed cropping of Mae Yang Ha and Mae Sa Mai, to the tourist and resort-intensive landscape of Nong Hoi Kao			
Networks and channels for mobilising and cultivating everyday environmental heritage	*Karen environmental network*	Informal networks of *urban-educated youths* and young people starting to work in forestry	'*Forest care club*' (which disappeared but left some ideas on tree restoration) *Hmong environmental networks* (and esp. their role in mobilising Dong Seng for contestation)	Young *entrepreneur associations* and networks
	Women's groups and associations in all 4 villages (textiles/fabric production)			

Note: Not an exhaustive list to characterise complete heritage landscape but illustrative production from exploratory community-guided ethnographic research based on 26 documentation reports.

Source: Own elaboration.

included tangible aspects of the indigo plant and other natural materials (e.g. wooden barrels, limestone, rice), and products dyed by indigo were often marketed as environmentally friendly compared to alternatives from industrially produced dye. Secondly, it instilled a sense of attachment—both to the immediate local spaces where indigo was cultivated and to Hmong Indigenous identity. For example, the use of the dye for fabrics was a key element in the production of the traditional Hmong dress, which continued to be worn in everyday life and was regularly showcased during major public events (see e.g. Figure 3, which also depicts political acts involved in indigo and apparel to signal Indigenous identity and presence, albeit not directed specifically at external conservation stakeholders in this case), and the Hmong in Thailand have been recognised as master craftspeople in hemp batik indigo dyed fabrics (ผ้าเขียนเทียน; e.g. Thanyaporn Thanomvorakul was declared master craft producer in 2021 by the Sustainable Arts and Crafts Institute of Thailand founded under the patronage of Queen Sirikit). Thirdly, the heritage practices surrounding indigo were explicitly valued as worth

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FIGURE 3 Event facilitators wearing traditional Hmong dress at the World Formula Hmong Racing event in Nong Hoi Kao, 26–28 January 2024. *Source*: Photo credit Marco J. Haenssgen. Note that the public nature of the event (incl. live-streamed public broadcast of the presenters) did not necessitate separate media consent.

preserving and transmitting to future generations: Households usually maintained at least a few indigo plants around their houses and farms for medical use, arguing that, 'We can't give up planting [*indigo*] even though we don't dye any more. Because when our old-aged people or newborns catch a cold—turn hot and turn cool—they are quite sensitive to doctors' medicines. We can only rely on this plant' (female villager in Mae Sa Mai, 2022).

Lastly, practices and knowledge around indigo connected past, present, and future of the Hmong communities. Changing environmental conditions (esp. viable cultivation areas), alternative materials, and competition from industrially produced dye changed the face of the EEH surrounding indigo. For example, many weavers had started buying industrial dye but continued to blend it with fresh indigo leaves grown around their houses into 'teng Sua' ('Chinese indigo') so that it would 'come to life, producing a good smell and nice colour' (female villager in Mae Sa Mai, 2022). These links reached further into the future, as the resulting products have expanded into modern designs for casual wear (e.g. jackets, shirts, hats), producers reasserted themselves in the current market environment with aspirations 'to produce 100% chemical free' (female villager in Mae Sa Mai, 2022), and a local woman-led 'Hemp Textile Community Enterprise' (Doamang Community Enterprise, or วิสาหกิจชุมชนดาวม่าง งานผ้าใยกัญชง) had joined Her Royal Princess Sirindhorn's local seed conservation project to preserve the local indigo plants for future generations (in collaboration with Chiang Mai Rajabhat University).

These linkages demonstrated the dynamic inter-dependence between everyday heritage practice and its socio-ecological context: Remaining intrinsically meaningful at least for a subset of the community, indigo cultivation and dyeing practices have actively adapted to changing contexts. This heritage process has upheld ecological knowledge and led community members to re-imagine indigo cultivation in changing healthcare, economic, and socio-economic contexts. In doing so, the practice continued to build on specific ecological conditions and plant resources, but it also contributed to their maintenance through continued cultivation, the transmission of local knowledge, and the community's attachment to the local ecosystem. This inter-dependency was evident, for example, in the continued use and valuation of locally cultivated indigo in dyeing processes and in the assertion of explicitly chemical-free cultivation within changing market environments. As EEH, indigo also revealed its political antecedents in the contestation (selective continuation) and re-imagination of the heritage practice, and its links to systemic consequents as it integrated into social organisation through distinctly gendered practices while responding to challenges in economic livelihoods and healthcare practice.

Other examples of EEH Type 1 in the study sites included the broader practice of weaving in all four study villages, or the umbilical cord tree in Mae Yang Ha ('Dei pau htoof', with Christian adaptations of the original Pgaz K'Nyau rituals) (see Phatthanaphraiwan & Greene, 2023, for further details). As EEH, all these practices had in common that villagers accepted them as intrinsically valuable (albeit not uniformly within a community, which indicates contestation in its antecedents) and maintained connections to the local ecosystems. While Type 1 practices were not directly linked to external conservation stakeholders, they were nevertheless linked to political acts like dress as well as to the EEH process itself: Like TEK/IK, heritage practices adapted to contextual and social change (incl. rural development processes) through a process that required continued engagement of the community members with their shared heritage and visions of the future. The EEH example of indigo thereby also highlighted the uneven gendered and generational recognition of what community members wished to preserve.

4.2 | Everyday environmental heritage Type 2: To contest state conservation policies and land-use restrictions

EEH Type 2 mirrored the characteristics of Type 1 yet was actively instrumentalised to contest state policies and restrictions that interfered with villagers' relationship to their local ecosystem. The

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literature has already documented several and often conspicuous instances of such heritage that were present in the case study sites, such as tree ordination and the Hmong new year celebrations around the *ntoo xeeb* sacred tree (Huang & Sumrongthong, 2004; Leepreecha, 2004; Morrow, 2011; Siriphon, 2006).

Tree ordination was practised in our case study as well. In this cross-religious practice, trees were sanctified and protected from felling through a ritual and orange cloth that rendered the procedure akin to ordaining a Buddhist monk. It had emerged in the past decades and grew into a national initiative in 1997 with the scale of ordaining 50 million trees to celebrate 50 years of the late King Rama IX's accession to the throne (Morrow, 2011). Hmong as well as Karen highland communities joined the initiative—often blended with their own Christian and animist belief systems—partly to declare their sympathies to the Thai Royal Family, signal their identity as Thai citizens, and publicly assert their 'devotion to the environment' (Morrow, 2011, p. 58).

The Pgaz K'Nyau community of Soplan was one of the sites that practised tree ordination (Figure 4). Inspired by the nationwide tree ordination initiative, the village's spiritual leader organised the first tree ordination ceremony in the village in 1999 to protect the local forest. During the event, the community appealed to natural spirits with Pgaz K'Nyau rituals and offerings involving rice beer, chicken, and fruits (thus linking to and expanding existing environmental heritage practices), while also inviting Buddhist monks as well as government authorities to partake in the event. Later events would further involve national park staff, the police and members of local army garrisons so that, according to the village's spiritual leader, they 'would see and understand more about the way how Karen people [*i.e. Soplan and others*] conserve nature' (male villager in Soplan, 2022). The conspicuous orange cloth wrapped around the trees offered visible evidence of the activity. Tree ordination in Soplan thus became a blend of longstanding and instrumentally important environmental heritage activities with new ritualistic practices, and with the explicit aim of fostering understanding of the community's forest conservation concerns towards outside stakeholders.



FIGURE 4 The spiritual leader of Soplan village ordains a tree in the local forest. *Source*: *Nurturing Lives in the Forest* documentary (https://youtu.be/IHRXo_ORGPo?si=dejAuRsEL7yoy35n), used with permission and with media consent of depicted individual.

Less salient everyday practices of Type 2 EEH (with and without spiritual inflections) included the semi-annual tree planting and water source cleaning ceremony in Mae Yang Ha village. Evolving from inconspicuous 'everyday' activities of a small group of villagers into a regular community event for the past two decades, approximately 50 villagers together with external stakeholders such as the local watershed management unit, national park rangers, and government administration officers would gather for half a day to engage in Christian prayers, separate into groups to clean the local spring (e.g. of garbage and chemical residue from agriculture) and plant banana trees in the forest, and regroup again at lunchtime for a joint meal and farewell. Villagers participated voluntarily and expressed their strong sense of attachment through this activity as 'this [*remotely located forest*] area belongs to us, so we have to preserve it' while also highlighting (in the same sentence) the performative aspect of the activity as they 'show that we love the nature' (male villager in Mae Yang Ha, 2022).

These examples illustrated that Type 2 EEH fulfilled strategic political purposes for the relationships between communities and external stakeholders with an interest in forest protection while retaining the main attributes of EEH as exemplified in the previous section. Some of these manifestations were activated in response (dialogue as well as resistance) to the top-down conservation policy of the Thai state while remaining intrinsically valued and instrumentally important for community members to protect and manage their local environment. If found to be environmentally sustainable, such practices could potentially form a basis for identifying activities to support communities' voices in the negotiation and articulation of bottom-up modes of local ecosystem conservation.

4.3 | Emerging everyday environmental heritage—Type 3

Owing to their underlying negotiation processes and the well-established biocultural linkage between humans and ecosystems, all types of EEH are dynamically changing (as are TEK/IK and more general biocultural heritage and cultural environmental traits and practices). However, a third group of EEH instances in our data had in common that they were newly recognised and emerging, representing Type 3 with the potential to mature and stabilise into EEH Types 1 or 2. Among the most visible examples was the firebreak clearing (evolving into EEH Type 2), which spanned all four case study villages and extended into inter-village environmental networks. Primarily a secular environmental management strategy, the firebreak was a separating forest corridor of approx. 5–10 m width and often up to 20 km length that around 50–300 people cleared every year around February and March of flammable materials such as dry leaves to slow down potential forest fires.[2] The practice arose in the 1990s as a community-based forest

[2]While information about the effectiveness of firebreaks in the study setting remains anecdotal, it has emerged into a firm component of forest fire management based on local experience that is also employed as a strategy in other countries (Karki, 2002).

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preservation effort prompted by the increasing enforcement of the state's conservation policy. Despite the external motivation, firebreak clearing quickly meshed with community life and reinforced community members' sense of belonging to the local ecosystem, thus gradually acquiring the character of EEH.

This could be seen for instance in Nong Hoi Kao, where firebreak clearing activities had been undergoing a process to become a social tradition that was joined by all married men in the village, Tai Yai migrant workers in the area (both male and female), representatives from the Mae Sa Watershed Management Unit, volunteer students from Chiang Mai University, and external sponsors. As a response to forest fire risks, growing concerns about air pollution, but also to external pressures for forest conservation, the political nature of the firebreak was clearly visible, as the village head would explain:

> The firebreak clearing helps reduce the number of fire hot spots in the area, but it also enables people—both insiders and outsiders—to come together and strengthen our relationship. […] The real essence of these practices is in fact a strategy to build unity and understanding among people over the use of natural resources.
>
> (Male villager in Nong Hoi Kao, 2022)

While the firebreak activities were visibly stabilising into EEH Type 2, more recently emerging practices were still in flux and included, for example, initiatives driven by youths who returned to their communities after receiving education in the urban lowlands. In Mae Yang Ha, a youth volunteer group formed under the name 'Dream Makers' (คนสร้างฝัน) in 2013 to remedy social issues in their sub-district but also to engage in environmental rehabilitation. Among their activities was the regular 'secret tree planting' in which they would shoot Western-inspired tree seed bombs (tree seeds encapsulated in soil and mud) into damaged forest areas (e.g. because of timber extraction or forest fires). The activity repurposed tangible elements of environmental heritage in the form of traditional slingshots (originally used for bird hunting) to launch tree seeds into the forest, and it found strong positive recognition by the government's local watershed unit that had been supplying the tree seeds upon request of the youth group (thus also acknowledging the role of state authorities as partners). A group member also reflected on the sense of attachment reproduced through the secret tree planting activity:

> They [*Dream Makers*] are a small group of people. They hope to see more youth join the [*secret tree planting*] activity and want to see more youth realise that we belong to nature. It also belongs to us: we need to preserve nature so that we will have sufficient natural resources forever.
>
> (Male villager in Mae Yang Ha, 2022)

In other words, while still a relatively recent initiative (whose conservation effectiveness was yet to be established), the youth group members were enthusiastic about their long-term prospects in a way that could become recognised as heritage.

This third type underscored the dynamic character and future-orientation of EEH: Heritage practices do not only adapt and disappear but also continually emerge, which can give rise to new forms of cultural expressions that gradually become recognised by communities as EEH. The examples also highlighted the connection between EEH and broader social systems as the newly forming heritage became a vehicle for strengthening community networks and relationships. Likewise, the case of incorporating firebreak clearing into communities' EEH demonstrated how secular environmental management practices were strengthened endogenously by social practices as they acquired attributes of EEH and thereby reconfigured community–ecosystem relationships recursively. Recognition of EEH Type 3 can thus help to explore how heritage forms, the conditions that help it consolidate, the reasons why some practices gain traction while others fade (i.e. its antecedents), and how it interacts with broader social and environmental practices on the community level (i.e. its consequents).

4.4 | Networks and channels for mobilising and cultivating everyday environmental heritage

While our cross-sectional case study only exemplified momentary manifestations of EEH, we also observed the important role of social and institutional networks that facilitated the creation, evolution and politicisation of EEH. A salient example of the pervasiveness of networks related to firebreak clearing, which formed as collaborative activity across several villages and subsequently spread as common practice across the northern Thai highlands. Mae Sa Mai village was in a pioneering position during this process, where it initially worked with three neighbouring villages to clear a 15 km long firebreak in the early 1990s. The village cluster subsequently formed the Doi Suthep-Pui Environmental Network, not only to showcase its environmental concerns but also to perpetuate its activities through external support: 'We did it [*i.e. establishing firebreak clearing activities*] together without external support. Only after the authorities realized that this practice is helpful, they started to support us with funds' (Male villager in Mae Sa Mai, 2022). The activities along the network also inspired other communities including Nong Hoi Kao to follow suit with firebreak clearing, and representatives of the communities in the Doi Suthep-Pui Environmental Network joined the Hmong Environmental Network in Thailand to further exchange experiences, ideas and visions on how they could co-exist with nature in light of pressures from the state's Royal Forest Department.

The networks underlying and facilitating the emergence of EEH underscored the dynamic interdependencies between EEH and its socio-ecological context. On the one hand, they formed part of EEH's systemic consequents as heritage practice proliferated and was politically mobilised across communities. These networks were also partly structured around socio-ecological features such as inter-community firebreaks or ethnic lines (e.g. the Karen Environmental

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and Social Action Network). On the other hand, networks acted on the antecedents of EEH as they helped distribute ecological knowledge and heritage practice and contributed to collective management and community-state relationship negotiations. The theme of networks thus underlined that the transmission of knowledge, practices and objects from past to the present and future required people and institutions to be configured in particular ways to transmit and adopt new practices.

5 | DISCUSSION

Our case study identified three key types of EEH including (1) intrinsically valued practices that do not directly address external conservation stakeholders, (2) practices that were instrumental to contest state conservation policies and land-use restrictions, and (3) still evolving or rapidly changing practices with the potential to mature into EEH Types 1 or 2. Social and institutional networks facilitated the creation, evolution and politicisation of EEH and underscored the dynamic inter-dependencies between communities and their socio-ecological context. Our approach considered EEH manifestations as the unit of analysis on the community level and examined them within the broader heritage landscape as processes linking antecedent negotiations to define collectively valued practices and consequent social, behavioural and political systems they mobilise. Individual aspects within this constellation have been well documented in the interdisciplinary conservation and social science literature, for example:

- Related to TEK/IK, biocultural heritage, and the study of environmental cultural traits: The diverse and dynamically changing instances of local environmental knowledge, cultural traits and biocultural heritage (Berkes, 2018; Ekblom et al., 2019; Khosravi Mashizi & Escobedo, 2025; Lukawiecki et al., 2022; Maffi & Woodley, 2010; York, 2025)
- Related to the study of environmental cultural traits and anthropological research: The political nature and performativity of cultural practices and markers (Hayami, 2006; Isager & Ivarsson, 2002; Morrow, 2011)
- Related to political science and anthropological research: Everyday forms of resistance in systems of oppression (Scott, 1985, 1990)
- Related to CES: Place-based values of ecosystems for human cultural expression (Azzopardi et al., 2023; Chan et al., 2012; Fish et al., 2016)
- Related to the study of environmental cultural traits and anthropological research: The behavioural impact of strategies that could also constitute paradoxical behavioural outcomes of conservation objectives imposed from the top-down (Raycraft, 2020; Sato, 2000; West et al., 2006)
- Related to TEK/IK, environmental cultural traits, and biocultural heritage: Threats to cultural expression and engagement with ecosystems stemming from top-down conservation policy and biodiversity loss (Bridgewater & Rotherham, 2019; Dudley et al., 2009; Fernández-Llamazares et al., 2021; Lyver et al., 2019; Trakansuphakorn, 2008)

However, the EEH framing offered insights that complement existing approaches of biocultural heritage (on which it builds with impulses from ordinary heritage research), TEK/IK (with which it partly overlaps yet with different analytical and temporal orientations), CES (which prioritises linkages from ecosystems to humans for valuation purposes), and the study of environmental cultural traits and practices (which represents an important yet eclectic body of socio-ecological research that resonates strongly with the individual components in EEH research). Specifically, by anchoring the analysis on instances of mundane as well as salient environmental cultural practices, we documented empirical evidence of a heterogeneous and dynamically changing heritage landscape in which cultural practices travelled across political arenas (e.g. *Dei pau htoof* umbilical cord tree rituals in one Pgaz K'Nyau community losing and in another retaining political significance with external conservation stakeholders), showed how even firebreak clearing as a secular environmental management strategy became gradually incorporated into communities' EEH and their efforts to negotiate state-led conservation approaches, and traced how networks fostered EEH across communities.

These insights underscore the conceptual contribution of the EEH framing for studying the interdependence between humans and their local ecosystems and the interlinkage of EEH with broader social, behavioural and political systems. The conceptualisation of EEH as negotiation also highlights that its processes and outcomes, too, can be inequitable, exclusionary and subject to problematic power constellations within and outside of communities. Such issues had been problematised in the literature on TEK/IK and CES as well as human development more broadly (Berkes, 2018; Pascual et al., 2023; Robeyns, 2005), and they materialised in the present empirical application as gendered and unevenly recognised EEH practices such as firebreak clearing. The concept of EEH also complements the everyday heritage literature with a methodological shift to non-urban settings and conceptual engagement with the place of heritage in conservation (as opposed to conserving heritage) (Ireland et al., 2024; Raccomandato & Radermecker, 2026).

In practical terms, a heritage-sensitive approach could thereby help identify entry points for the participatory co-design of conservation activities based on existing EEH practices that communities already activate in response to top-down conservation policies (for an application, see Sunanlikanon et al., 2026).

However, it is yet to be established what the environmental outcomes of EEH support are, and how they are to be achieved or maximised. Overall, quantitative evidence on environmental outcomes relating to EEH remains scarce and typically focused either on specific heritage instances (e.g. sacred forest groves, Sullivan et al., 2024) or broader Indigenous- and locally managed territories (Dawson et al., 2024; Fa et al., 2020; Simkins et al., 2024; Sze et al., 2022), rather than on impact pathways within complex heritage

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landscapes and the conditions under which EEH practices would be especially beneficial. Our specifical study also did not demonstrate that support for EEH produces better ecological outcomes or conservation effectiveness. However, some specific manifestations of EEH documented in our case study have been found in other research to have positive outcomes on forest health. For example,

- Bruun et al. (2017) assessed how the abandonment of rotational agriculture in favour of land- and input-intensive agriculture in a northern Thai village entailed a degradation of soil quality.
- Studies on firebreak clearing have demonstrated that, although effectiveness is variable and subject to influencing factors such as flame length, firebreaks tend to slow down the spread of wildfires (Gannon et al., 2023; Ortega et al., 2024; Restas, 2023). Firebreaks have also been documented as a tool to manage small-scale agricultural fires in Northern Thailand (Hoare, 2004).
- Sriviraj et al. (2018) and Tannenbaum (2000) documented how tree ordination rituals were instituted in various northern Thai communities to deter logging activities and commercial developments in their local forests.

At the same time, EEH practices are conceptualised as intrinsically valued by communities (or else they would not be recognised as heritage), but the concept does not require them to be intrinsically pro-environmental. For example, tourism-based activities that may embrace communities' EEH would regularly draw questions about their environmental footprint and impact on protected spaces (Elliott et al., 2019; Leepreecha, 2016). However, where elements of the heritage landscape are found to be detrimental to the local ecosystems, EEH as a process offers a platform for engaging with intra-community negotiations on the interpretation, preservation and potential adaptation of specific heritage instances over time (as long as these processes are owned by the communities).

We could therefore hypothesise that the impact pathways from EEH to environmental outcomes are likely dependent on community-specific configurations of the heritage landscape. Yet, irrespective of specific heritage manifestations, environmental outcomes potentially also arise from engaging with EEH as a process, especially in conditions where communities experience disengagement from their local ecosystem. Support for this pathway is visible in the setting of Northern Thailand, where such disengagement has been driven by two main sources of pressure: Firstly, exclusionary conservation policies have threatened to evict forest-dwelling and adjacent communities from their residential lands, which disrupted their attachment to place, their visions of a local future, and their expressions of everyday environmental heritage—to the extent that, 'Some community members are beginning to feel that, if they no longer have any rights to access or benefit from the land they have cared for, then they may as well abandon forest fire prevention [that many regard as environmental heritage]' (Haenssgen, Sunanlikanon, Leepreecha, Sakboon, Petkoff, et al., 2026, p. 7). Secondly, rural development processes in northern Thailand have been pushing communities towards individualism and precarious livelihoods (Haenssgen et al., 2023). Psychologists and behavioural economists note that such stressors challenge people's long-term and strategic decision-making (Haushofer & Fehr, 2014; Sheehy-Skeffington et al., 2026; Starcke & Brand, 2012), potentially at the expense of engaging with community life and the local ecosystem (Haenssgen, Leepreecha, Sakboon, & Chu, 2026).

We could hypothesise that EEH can mitigate the impact of such processes. One key aspect emphasised in the everyday heritage literature is its ability to foster a sense of place and belonging in communities (Auclair & Garcia, 2021; Ireland et al., 2024; Mosler, 2019), which has also been demonstrated in studies exploring specific environmental heritage manifestations such as tree ordination (Shum et al., 2026; Sitthisuntikul & Horwitz, 2015). Early insights from related research by our study team in the same northern Thai context underscore this argument and suggest that support to communities' EEH can help retain social capital, uphold engagement with local ecosystems, and potentially even mitigate market-driven sources of precariousness (Haenssgen, Sunanlikanon, Leepreecha, Sakboon, Kijdumnern, et al., 2026; Haenssgen, Sunanlikanon, Leepreecha, Sakboon, Petkoff, et al., 2026; Sunanlikanon et al., 2026). Our ongoing engagement with the case study villages further sparked local community movements to become recognised as special cultural zones under the 2025 Law on the Protection and Promotion of the Way of Life of Ethnic Groups or as 'Other Effective Area-based Conservation Measures' under the Kunming-Montreal Global Biodiversity Framework, the recognition of which would help address key sources of state-community conflict that had fuelled environmental disengagement.

Future work to inform these hypothetical impact pathways and broaden the evidence base on the ecological outcomes of EEH may involve a systematic mapping of place-based practices that can be linked to a range of conservation indicators assessed through satellite and remote sensing applications such as tree cover changes or forest fire incidents. Crowdsourcing approaches building on the voluntary contribution of EEH practices by Indigenous community members could broaden this database further—provided that these are owned and controlled by the respective community to avoid instrumentalization and a reinforcement of historical human security risks by state actors (Lakanavichian, 2006; Roth, 2007; Virapongse, 2017). Further work could identify and characterise systematically varied local EEH practices, their underlying processes, and community-guided assessments of their conservation potential. Subsequent behavioural intervention design and piloting could then identify barriers and enablers of these practices along pathways connecting EEH to broader social, political and behavioural systems (see e.g. the models of Dolan et al., 2012; Michie et al., 2013). This behavioural design approach would embrace locally valued heritage practices and a systemic perspective that is not limited to the communities performing EEH, also considering up- and downstream contexts (e.g. policy action, public sentiment, consumer behaviour).

Before concluding, it is important to engage further with the empirical limitations of this case study analysis, and the related opportunities for future multidisciplinary research on EEH. Although

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the study took place over a period of 2 years with repeated data collection and consultation visits to the participating communities, the exploratory nature of this research limited the transferability and exhaustiveness of the specific empirical findings. Immersive and uninterrupted participant observation of at least 1 year (to capture subtle everyday practices during a full seasonal cycle), specific inclusion of and engagement methods designed for youths, and a wider participation of Indigenous communities would thereby contribute to a comprehensive understanding of expressions and processes of EEH and broader representation of groups often overlooked in heritage research for a yet more refined typology and the identification of regional commonalities and differences.

6 | CONCLUSIONS

Speaking to the complex ways in which humans shape and in turn are shaped by their environment, this article illustrated EEH manifestations in four Indigenous highland communities in the Thai tropics. The concept of EEH as a process considered how antecedent negotiations define locally valued cultural practices and the consequent social-behavioural-political systems they mobilise, through which we documented a diverse landscape of practices that is threatened by, evolves in response to, and can (in the case of EEH Type 2) contest top-down conservation approaches and rural development processes; and it is intertwined with social and institutional networks that facilitate its creation, evolution, and politicisation. At the same time, EEH demonstrates that Indigenous peoples are not passive victims of state oppression: rather, their EEH practices underscore the agency, responsiveness and innovation both within their communities and relative to external political stakeholders.

Building on these practices could complement the existing range of biocultural approaches to foster conservation that is inclusive and respectful of Indigenous peoples' realities and livelihoods (Herse, 2022)—and thus contribute to a global policy movement that increasingly recognises the established position of Indigenous peoples in environmental conservation. However, doing so effectively requires avoiding romanticisation; recognising instead that EEH practices are variously accepted within and across communities, at times without tangible environmental outcomes, and that they change dynamically with often contemporary expressions and clear links not only to the past but also to the future.

AUTHOR CONTRIBUTIONS

Study conceptualisation, design, and theoretical framing: Marco Johannes Haenssgen, Prasit Leepreecha, Mukdawan Sakboon, Ta-Wei Chu, Alex Mark Lechner, Sarobidy Rakotonarivo, Ivo Vlaev and Elizabeth Auclair. *Study implementation*: Marco Johannes Haenssgen, Navaporn Sunanlikanon, Prasit Leepreecha, Mukdawan Sakboon, Ta-Wei Chu, Urai Yangcheepsutjarit, Inthanon Sutjathammawong and Darrel Chin Fung Tiang. *Data cleaning and preparation*: Marco Johannes Haenssgen, Navaporn Sunanlikanon and Darrel Chin Fung Tiang. *Data analysis*: Marco Johannes Haenssgen, Navaporn Sunanlikanon, Urai Yangcheepsutjarit, Inthanon Sutjathammawong, Prasit Leepreecha, Mukdawan Sakboon, Ta-Wei Chu, Maria Ann Sanu and Darrel Chin Fung Tiang. *Supervision*: Marco Johannes Haenssgen, Prasit Leepreecha and Alex Mark Lechner. *Manuscript draft*: Marco Johannes Haenssgen. *Manuscript review and approval*: Marco Johannes Haenssgen, Navaporn Sunanlikanon, Prasit Leepreecha, Mukdawan Sakboon, Ta-Wei Chu, Urai Yangcheepsutjarit, Inthanon Sutjathammawong, Maria Ann Sanu, Darrel Chin Fung Tiang, Alex Mark Lechner, Sarobidy Rakotonarivo, Ivo Vlaev and Elizabeth Auclair.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data are available from the corresponding author upon reasonable request as long as it does not compromise the confidentiality of participants' responses.

ETHICS APPROVAL

The study received ethical approval from the University of Warwick Humanities and Social Sciences Research Ethics Committee (Ref. HSSREC 65/19-20 AM02 and 71/23-24). With existing ethical approvals from the University of Warwick, the Chiang Mai University Research Ethics Committee waived local ethical approval so as to avoid duplication of work in accordance with its ethical review policy. We confirm that research was performed in accordance with relevant professional guidelines, ethical approvals, and regulations,

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that local permissions to conduct research were obtained from authorities and community leaders, and that informed consent was obtained from all participants. Informed consent for publication of images was obtained from all depicted individuals.

STATEMENT ON INCLUSION

Aside from co-authoring this paper with Indigenous scholar-activists and Indigenous researchers from Hmong and Pgaz K'Nyau communities in Thailand, this broader research project also involved work and consultations with the Indigenous highland communities on the basis of longstanding collaborative relationships with the research team (in some cases approximately 30 years). While data collection involved collaboration with villagers as research assistants, we subsequently shared and discussed the significance of the findings with the communities and produced local-language infographic banners for the communities to own. Public engagement work further involved a policy conference with villagers, artists, scholars, and policy stakeholders (incl. the Royal Forest Department), the production of the 45-min documentary *Nurturing Lives in the Forest* (by Nontawat Numbenchapol), the recording of diverse villagers' viewpoints on everyday environmental heritage for a policy-oriented information video, and a public event and roundtable discussion with Thai members of parliament in which this video was shared.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Appendix S1. Comparison of everyday environmental heritage with related concepts; outline for documenting everyday environmental heritage.

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