Received: 11 September 2024 | Accepted: 9 June 2025

DOI: 10.1002/pan3.70098

People and Nature

REVIEW AND SYNTHESIS

Global perspectives, local solutions: Improving human–predator coexistence through collaboration, meaningful experiences and cross-cultural knowledge

Rocío Almuna[1,2,3,4] | Cristina E. Ramalho[1] | José Tomás Ibarra[3,5,6] | Peter Speldewinde[2] | Stephen D. Hopper[2,7]

[1]School of Agriculture and Environment, The University of Western Australia, Perth, Western Australia, Australia; [2]Albany Campus, The University of Western Australia, Albany, Western Australia, Australia; [3]ECOS (Ecosystem-Complexity-Society) Co-laboratory, Centre for Local Development (CEDEL), Centre for Intercultural and Indigenous Research (CIIR), Villarrica Campus, Pontificia Universidad Católica de Chile, Villarrica, Chile; [4]The Peregrine Fund, Boise, Idaho, USA; [5]Cape Horn International Center for Global Change Studies and Biocultural Conservation (CHIC), Universidad de Magallanes, Puerto Williams, Chile; [6]Department of Ecosystems and Environment, Faculty of Agriculture and Natural Systems (FASN) & Center of Applied Ecology and Sustainability (CAPES), Pontificia Universidad Católica de Chile, Santiago, Chile and [7]School of Biological Sciences, The University of Western Australia, Albany, Western Australia, Australia

Correspondence
Rocío Almuna
Email: rocio.am92@gmail.com

Funding information
Rufford Foundation, Grant/Award Number: 38833-1; Peregrine Fund; School of Agriculture and Environment, University of Western Australia

Handling Editor: Douglas Clark

Abstract

1. Human–predator coexistence is a complex and dynamic relationship influenced by a variety of social–ecological factors.
2. Recognising conflict as an inherent aspect of coexistence, rather than merely a problem to be solved, is crucial.
3. This literature review examines how a range of factors contributes to human co-existence with predators.
4. A systematic review of 76 peer-reviewed articles from 33 countries provides valuable insights into the complexities associated with these factors across different contexts.
5. Collaboration among social actors is crucial for addressing cultural tensions, increasing trust in state agencies and reaching agreements for coexistence practices.
6. While material benefits (e.g. ecotourism, financial compensation) are often emphasised, relational and intrinsic values, emotions and meaningful personal experiences play an even greater role in fostering coexistence.
7. Acknowledgment of positive predator attributes, mutual benefits, cultural significance and deep human–wildlife connections may help shape perceptions of predators in a culturally informed manner.
8. Further appropriate and respectful cross-cultural research that amplifies Indigenous voices and knowledge is essential for understanding the nuances of human–predator interactions across diverse socio-economic and ecological contexts.

9. Comprehensive management to improve human–predator relationships needs to consider ecological contexts alongside the cultural norms and priorities of local communities. This approach will enable legitimate, situated and long-term coexistence practices and solutions.

KEYWORDS
carnivores, interactions, raptors, social–ecological landscapes, tolerance

1 | INTRODUCTION

Predators are at the top of food chains and play an important ecological role in regulating the presence and abundance of many species, both animals and plants. They are also reliable indicators of biodiversity and ecosystem health and generate valuable opportunities for ecotourism (Estes, 1996; Ibarra & Martin, 2015; Ohrens et al., 2021). In agricultural lands, predators can control pests and species that can transmit diseases to livestock and people (Roemer et al., 2009). Moreover, they often hold cultural significance and influence beliefs across different societies (Benavides & Ibarra, 2021; Dickman, 2010). Predators are often focal species in conservation programmes as their decline and/or local extinction can impact other wildlife abundance and richness (Roemer et al., 2009). Carnivorous animals, including mammals and raptors, may prey on livestock and may even pose direct harm to humans (Graham et al., 2005). Livestock losses can disproportionately impact vulnerable and marginalised communities with limited income alternatives (Gross et al., 2021). Consequently, people may perceive predators as a threat, which can lead people to act against conservation initiatives or even use lethal control measures against these animals (Dickman, 2010).

Conservation planning and land use planning approaches often separate human settlements from conservation reserves dedicated to nature and wildlife (Frank & Glikman, 2019). Along with increasing human population and land-use changes (including increasing urbanisation), this approach has reinforced the idea that wildlife may threaten human interests and vice versa (Gross et al., 2021). It has also contributed to a perception of unacceptable risks associated with living among predators (Blackwell et al., 2016; Frank & Glikman, 2019). Moreover, it has oriented the management of human–wildlife interactions through a conflict-oriented lens, which has focused on minimising the direct negative impact of wildlife on human interests (Artelle et al., 2024; Bhatia et al., 2020; Blackwell et al., 2016; Kansky et al., 2014). However, this is under increasing scrutiny because it may reinforce the division between humans and nature, perpetuating the perception that predators are detrimental to human well-being. This perception can bias conservation management and research towards focusing on direct negative impacts over indirect positive interactions (Bhatia et al., 2020; Pooley et al., 2020).

An alternative approach to the management of human–wildlife interactions focuses on coexistence or tolerance and on promoting people and predators to co-adapt to shared landscapes in space and over time (Carter & Linnell, 2016). The term coexistence began appearing in the scientific literature in the late 1990s and early 2000s, as conservationists started acknowledging that 'isolating wildlife in protected areas' was neither a sufficient nor sustainable strategy for conservation (Sillero-Zubiri & Laurenson, 2001; Vaske et al., 1995). Although '*coexistence*' may not always be how diverse Indigenous Peoples frame their relationships with nature, their knowledge systems and values may align with sustainability and conceive the importance of a well-established and holistic people-nature wellness (De Gregorio et al., 2021; IPBES, 2024; Katti, 1995; Pascual et al., 2023).

Many Indigenous worldviews embrace values-led ecosystem management, where humans are deeply interconnected with the earth and life, fostering enduring relationships that prioritise collaboration with nature over control (Artelle et al., 2018; Brondízio et al., 2021; Menzies et al., 2024; Wooltorton et al., 2019). A striking example in a predator context is the Arhuaco People of northern Colombia, who follow the *Law of Origin*, a cultural system rooted in establishing respectful and reciprocal relationships to ensure the harmony and permanence of all living things (Pinto-Marroquin et al., 2022). In this worldview, apex predators are guardians of ancestral knowledge and original stewards of the land. Similarly, in India, predators are also seen as ancestors, deities and teachers, embodying reciprocal and respectful relationships within shared landscapes (Jolly et al., 2022). Such perspectives illustrate how Indigenous and Traditional Ecological Knowledges can counterbalance dominant conflict-oriented narratives, offering a deep understanding of positive, place-based human–wildlife interactions (Chetri et al., 2020; Wilder et al., 2016).

When there is coexistence, humans and wildlife interact and cope with moderate and manageable competition (Frank & Glikman, 2019), which implies that coexistence does not entail the absence of conflict (IUCN, 2023). Recent studies have criticised the conflict-to-coexistence continuum, advocating for a more layered assessment that recognises conflict as an integral part of human–wildlife coexistence (Hill, 2021; Pooley et al., 2020). These studies also acknowledge that human–predator relationships are not inherently negative, emphasising the promotion of positive interactions alongside preventive measures.

To shift from conflict to coexistence-oriented human–wildlife management, there is a growing interest in understanding the range of factors that influence human–predator interactions and

how they affect people's attitude towards predators. In general, there is a tendency to explore direct economic impact and tangible factors (e.g. economic losses due to livestock predation or gains from ecotourism) as the main drivers of attitudes (Kansky et al., 2021). Nonetheless, a number of studies suggest that intangible factors, such as values, emotions and meaningful experiences, can be stronger predictors of coexistence (Ghasemi et al., 2021; Jacobsen et al., 2021).

The impact of different factors on human–predator relations can be influenced by a person's cultural heritage, normative values, worldviews and ecological context (Carlson et al., 2020). Surprisingly, the nuanced way in which different socio-ecological factors influence coexistence across different cultures has been, to our knowledge, scarcely addressed by existing reviews. We considered that there is a compelling opportunity to conduct a literature review of academic articles to test if social–ecological factors influence coexistence differently depending on the context. We hypothesise that this literature review would reveal key research gaps and priorities for future studies. We also hypothesise that cross-cultural approaches would provide broader insights into positive human–predator relationships, offering valuable guidance for environmental management practitioners and policymakers. To address this hypothesis, we developed the following research questions to guide our review:

1. How do particular social–ecological factors influence coexistence?
2. What positive terms do people use to describe predators, and what does this information reveal about the nuances of human–predator relationships?
3. How can a cross-cultural approach enhance our understanding of human–predator co-adaption in shared landscapes?

2 | METHODS

2.1 | Design of the literature review

We conducted a systematic literature review following Pullin and Stewart (2006) and the Preferred Reporting Items for Systematic Reviews (PRISMA) Statement (Page et al., 2021) to identify how different social–ecological factors influence human coexistence with predators and understand the contributions of cross-cultural approaches. We included in this review all predators that may impact human interests by preying on livestock or game animals, and those that may pose a direct risk to human safety. The review was limited to peer-reviewed articles in academic journals with an international scope and restricted to the English language. We focused on empirical research studies examining social–ecological factors using methodologies from the social and ecological sciences. Review articles that included data from studies included in our review were discarded to avoid duplication. However, by examining the reference lists of these review articles, we were able to identify additional relevant publications.

TABLE 1 Search terms used for literature review.

Coexistence		*Carnivore**		*Human*
OR		OR		OR
Tolerance		*Raptor*		*Farmer*
OR		OR		OR
Attitude		*Birds of prey*		*Landowner*
OR		OR		OR
Perception	AND	*Feline*	AND	*Hunter*
OR		OR		OR
Acceptance		*Canine*		*Indigenous***
OR		*OR*		OR
Conflict		*Bear*		*First Nations*
OR		OR		
Livestock predation		Predator		

*We refined the results using the following predator English names eagle, cougar, mountain lion, tiger, lion, puma, coyote, hyena, vulpes, wolf, dingo.

**Since one of our objectives is to explore how cross-cultural knowledge can improve our understanding of coexistence, we specifically searched for perspective articles authored by Indigenous writers. However, we were unable to find any such articles.

2.2 | Data collection and screening—searching and selecting articles

We used two interdisciplinary databases, the ISI Web of Science (2023) and Scopus (2023), which include a wide range of indexed journals. The search was finalised on 25th March 2023, covering publication dates from the year 2000 to 2023, according to the search terms listed in Table 1 and the selection criteria described in Figure 1. Articles that focused solely on conflict management, prevention or risk reduction were excluded, as numerous reviews already explore factors associated with conflict or negative attitudes (Digun-Aweto et al., 2020; Kansky et al., 2014).

We then screened the abstracts of the initial list of retrieved papers ($n = 734$) to narrow our search to studies relevant to our research questions. Three selection criteria were used for this purpose:

1. Studies that involve terrestrial predators (raptors, carnivorous mammals).
2. Studies that research human–predator relationships focusing on coexistence rather than conflict management.
3. Studies that discuss factors associated with coexistence.

We further assessed the eligibility of the articles by applying the same criteria to the full-text versions. A total of 76 eligible articles were identified through this process.

2.3 | Data extraction and categorisation

We conducted data categorisation and thematic analysis on the 76 selected articles. To guide our search of social–ecological factors

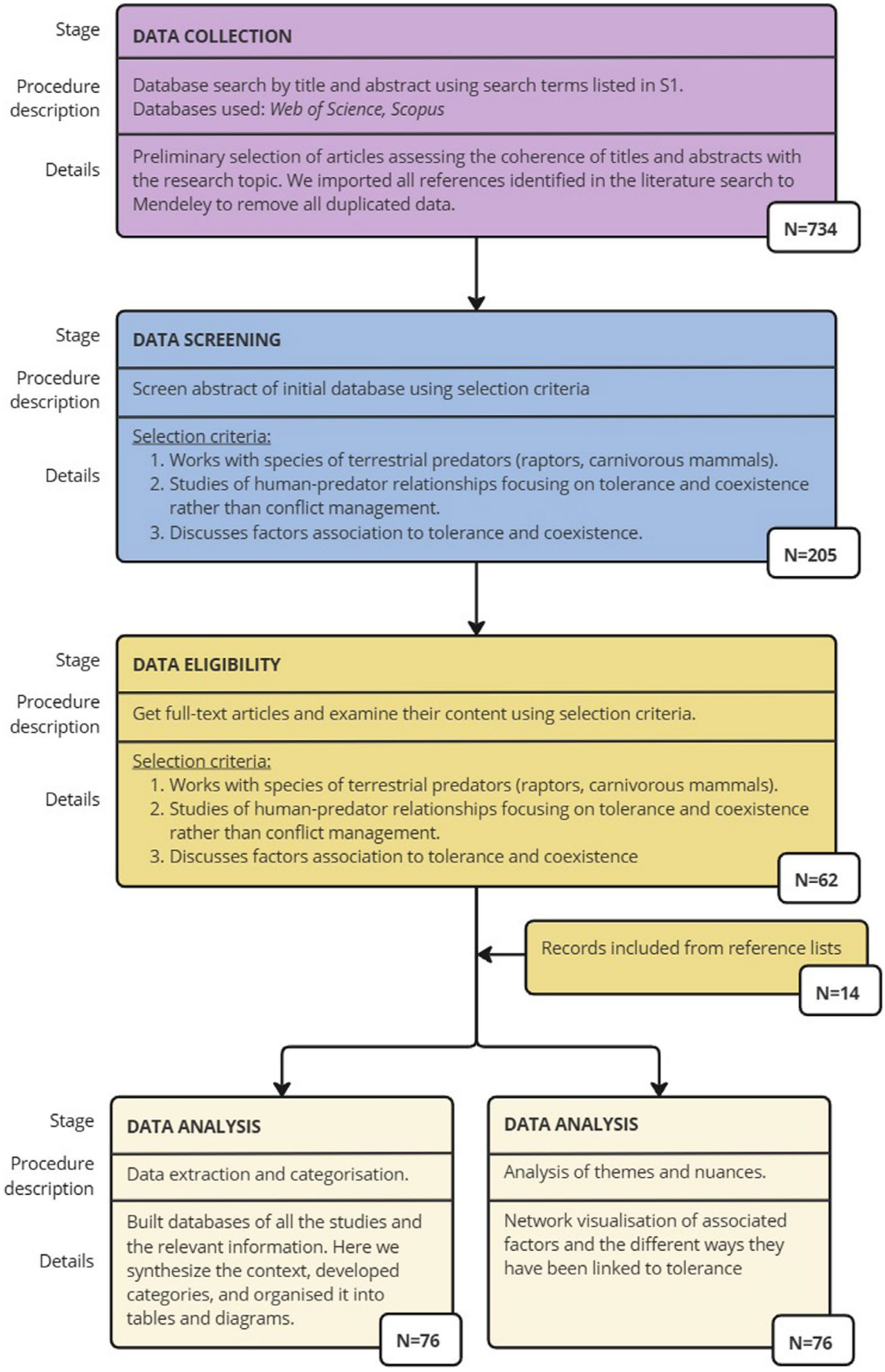

FIGURE 1 Literature review stages including the description of procedures, selection criteria and the number of articles (*N*) selected at each stage.

TABLE 2 Preliminary list of social–ecological factors related to coexistence.

Socio–ecological factors	Exposure (*exposure*)	Level of experience with predators and frequency of direct encounters or sightings. Exposure depends on factors such as spatial proximity, predator population size, species visibility, time spend outdoors and time living in a shared landscape
	Value orientations (*values*)	The cultural significance of native predators that is rooted in morals, cultural values, identity, beliefs and the importance given to nature conservation. Values orientation can be highly associated with social identity, ethnicity, place attachment and feelings of belonging
	Knowledge (*knowledge*)	Understanding of native predators including their physical features, behaviours, ecological role and cultural significance. Knowledge can be influenced by experience, personal interests and education. In this study, we differentiate between scientific knowledge and Indigenous / Traditional Ecological Knowledge
	Perception of risk (*risk*)	Perceived probability of suffering harm or loss, which can result in social amplification or reduction of risk. Lower perceived risk can result in reduced fear or concern about the potential dangers of living with predators
	Main economic activity (*activity*)	Occupation or primary activity that sustains the household economically. For farmers and hunters, this relates to how much the person or family depends on their livestock or game
	Tangible factors (*tangible*)	Tangible factors include monetary benefits from coexisting with predators (from ecotourism, private land conservation, compensations), and gain from ecological services (control of ungulates and other herbivores, carcasses, diseases and plagues)
	Intangible factors (*intangible*)	Perceived non-monetary value, emotional connection, positive meaningful experiences, appreciation of beauty and species aesthetics, pleasant feelings of awe and happiness
	Incentives (*incentives*)	Economic support from government and other agencies to compensate loss or to reward conservation efforts from landowners
	Community collaboration (*collaboration*)	Cooperation among local social actor, institutional and community support and trust in state agencies
	Gender (*gender*)	Influence of gender
	Education (*education*)	Level of education of participants
	Age (*age*)	Age of participants

within the articles, we created a preliminary list of factors related to coexistence (Table 2), based on previous research that identified them as potential influences on coexistence (Araneda et al., 2021; Digun-Aweto et al., 2020; Dorresteijn et al., 2016; Kansky et al., 2014; Marino et al., 2021).

For each publication selected for analysis, we collected the following relevant variables: (1) social–ecological factors included in the studies ('*included*'), and those found to be associated with human–predator coexistence ('*associated*'); (2) terms used by the authors to frame human–predator coexistence (i.e. coexistence, tolerance, cohabitation, positive interactions, acceptance and/or conviviality); (3) positive attributes and terms used by study participants to refer to predators (i.e. from direct quotes or authors' accounts of participant remarks); (4) cross-cultural component (i.e. whether authors considered different perceptions and worldviews across different cultures or ethnic groups); (5) human interest(s) identified as being affected by predators (i.e. livestock/game species predation, human safety and/or damage to infrastructure); (6) Predator species included in the study; (7) social actors (e.g. farmers, hunters, tourist, community leaders); (8) type of research methodology (e.g. quantitative, qualitative, mixed); (9) Country and main habitat where the study was conducted; (10) inclusion of female participants.

To understand the relative importance of each social–ecological factor (1), we calculated for each factor the percent ratio between the number of studies that found the factor to be associated with coexistence and the number of studies that included that factor in their analyses (association/inclusion ratio). To analyse the positive attributes and terms used to refer to predators (7), we listed them, recorded how many articles mentioned each term and categorised them into themes using an inductive approach, that is identifying patterns and categories directly from the data.

2.4 | Thematic analysis

After reviewing each publication and coding for social–ecological factors, we conducted a thematic analysis (Riger & Sigurvinsdottir, 2016) to understand how each factor was found to be associated with human–predator coexistence. This helped us identify the themes and nuances linked to each social–ecological factor. To do this, we analysed participant's statements (quotes) when available and authors understanding and impressions of their results within the 'Results' and 'Discussion' sections of each publication. The use of network graphs allowed us to visualise connections among emerging themes and identify patterns in the data. Moreover, we employed additional graphic representations such as bar charts, pie charts and maps to convey the data. The thematic analysis was conducted using NVivo (Release 1.7). The network graphs were implemented using Miro (available at: https://miro.com/), and other graphs were produced using Excel (v. 16.0) and IBM SPSS Statistics (v. 28.0).

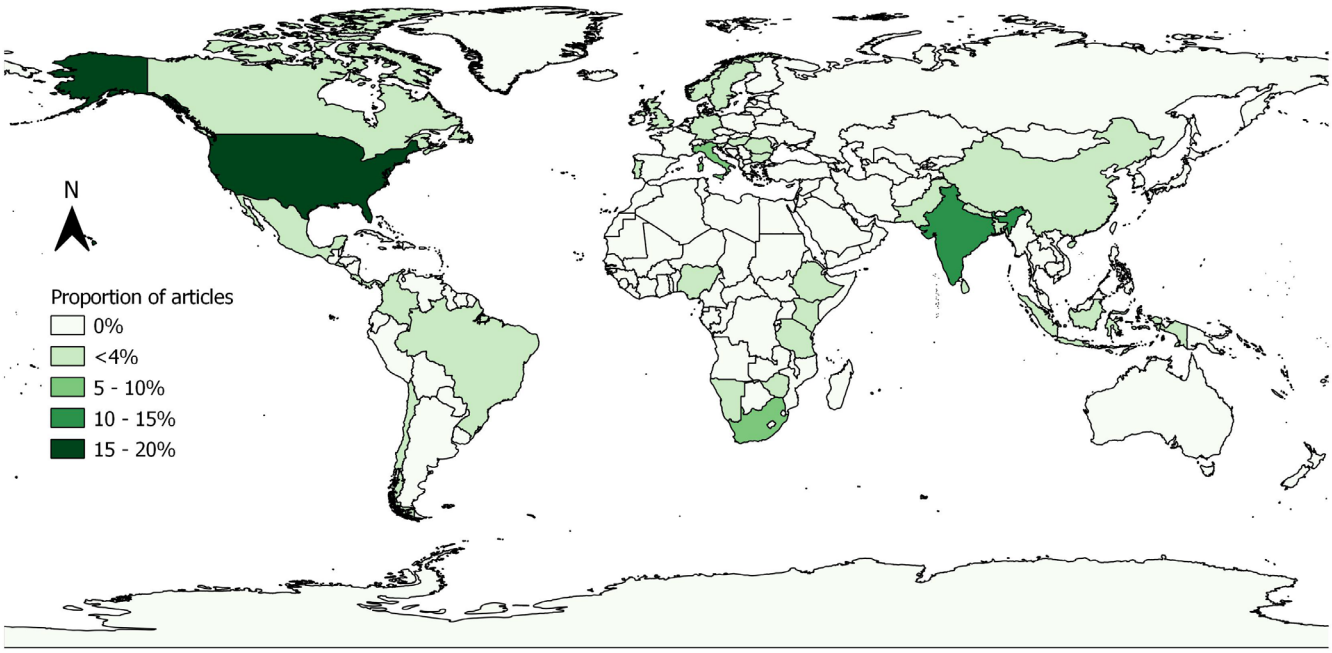

FIGURE 2 Map of the world showing countries included in the review and the proportion of articles found per country. The full list of countries included and number of papers can be found in Supporting Information S2.

3 | RESULTS

We selected 76 articles for thematic analysis (see list in Supporting Information S1). Publications came from 33 different countries (Figure 2), with the United States being the country with the greatest number of studies ($n = 15$), followed by India ($n = 8$) and South Africa ($n = 7$), the rest of the countries had less than five studies. The studies covered 22 species of terrestrial carnivores and raptors from 5 different animal groups: 7 species of felines, 5 species of canines, 2 bear species, 6 species of raptors, and 2 species of hyenas. The most popular animal group studied was felines, which was covered by 44% of the articles, followed by canines in 22% of the articles, articles working with carnivore assemblages were 13%. Full list of species can be found in Supporting Information S2.

Most studies used a combination of terms to refer to human–predators co-adapting to share landscapes, including 'tolerance' (used in 68 articles), 'positive (relations/interactions/attitudes/emotions)' ($n = 65$), 'coexistence' ($n = 55$), 'acceptance' ($n = 42$), 'cohabitation' ($n = 10$) and 'conviviality' ($n = 2$). All studies were observational (except for one experimental study) with a social (88%) or ethnographic (11%) focus, and only one article including both social and ecological methodologies. The type of analysis was either quantitative (68%), qualitative (17%) or mixed (15%). Female participation in the studies was 31% in average, 25 articles did not specify female participation and 3 articles reported less than 5% participation of women.

Social actors involved in the studies were farmers, hunters, citizens, villagers, conservationists, ecotourism workers, students, Indigenous peoples, community members, government officers and wildlife ranchers. Approximately half of the studies (51%) were undertaken in landscapes composed of a mosaic of protected, agricultural and urban land, 37% in protected areas, 7% in agricultural land and 5% in urban areas. Articles reported different human interests affected by sharing territory with predators, and they were mostly losses of domestic and game animals (93%), followed by human safety (66%), damage to infrastructure (13%) and use for traditional medicine (1%). Only 28% ($n = 21$) of the studies used a cross-cultural approach. These articles came from India ($n = 5$), United States ($n = 3$), South Africa ($n = 3$), Nepal ($n = 2$), Bulgaria, Indonesia, Bangladesh, Tanzania, Ethiopia, Zimbabwe, Canada and Colombia ($n = 1$ per country).

3.1 | Positive predator attributes valued by participants

We found positive references to predators in 46 articles (60%), primarily in those including qualitative or mixed methods. Positive references also appeared in quantitative studies where participants were allowed to elaborate on the topics addressed. The article's terms addressed 13 different species (Figure 3). From these, the five species that were mentioned the most were the snow leopard (*Panthera pardus*), wolf (*Canis lupus*), grizzly bear (*Ursus arctos*), tiger (*Panthera tigris*) and lion (*Panthera leo*). The animal group with the larger number of positive references were large felids (seven species), followed by medium- to large-sized canids (three species), hyenas (two species) and bears (one species).

We organised the terms into four categories: 'Desirable Qualities and Symbolisms', 'Human-like Qualities', 'Complex Skills and Traits' and 'Spiritual Attributes'. We grouped synonyms

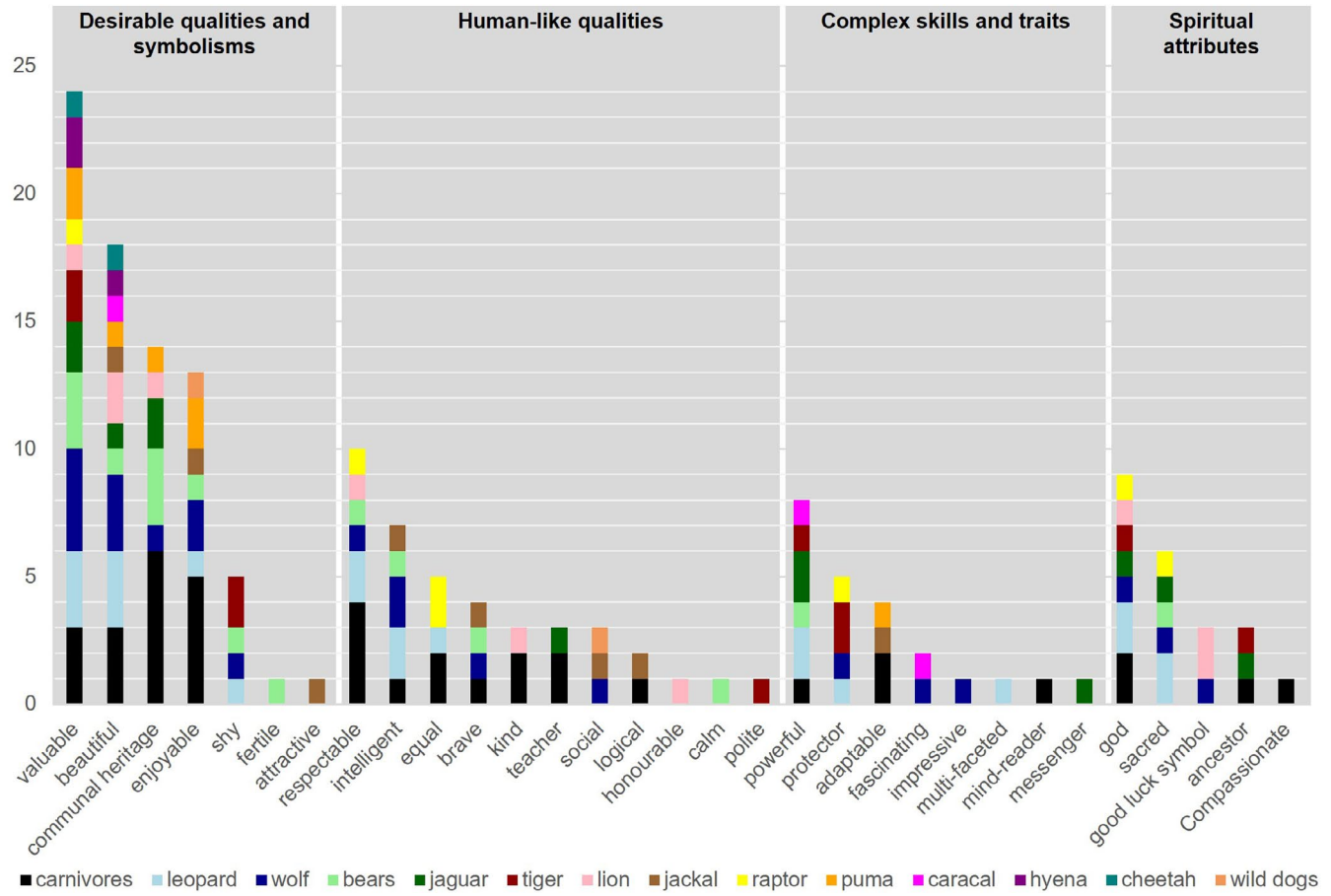

FIGURE 3 List of positive terms used for referring to different predator species represented in a frequency bar chart. The term 'carnivores' (brown) is used as a broad classification to refer to the group of predators as a collective rather than specific species.

together, such as 'intelligent' with 'clever' and 'brave' with 'courageous'. Similarly, the term 'cultural heritage' also encompassed references to carnivores as elements of the 'natural heritage', evoking a sense of pride and belonging. The term 'valuable' appeared most frequently, likely due to its broad range of interpretations, including cultural, ecological, economic and intrinsic contexts. 'Beautiful' was the second most common term, highlighting the aesthetic appreciation of animals. Overall, the positive references in the articles reflect the diverse aspects people value in coexisting with predators.

3.2 | Social–ecological factors associated with coexistence

We maintained the 12 social–ecological factors associated with human–predator coexistence (Table 2) and did not have to include any new factors. With 95% confidence, the median of factors evaluated per study was 5 [4.38, 5.62]. Authors used different methods to understand the social–ecological factors associated with human–predator coexistence. Quantitative methodologies were more commonly used (67%) than qualitative (18%), and 15% used a mixture of both.

In Figure 4, social–ecological factors are ranked by their relative importance (association/inclusion ratio). The most frequently studied factors were knowledge ($n=68$), tangible benefits ($n=58$) and exposure ($n=58$), followed by intangible benefits ($n=56$) and risk perceptions ($n=53$). These factors were associated with coexistence in 69%–83% of the studies that included them. In contrast, collaboration, despite being examined in fewer studies ($n=34$), had the highest relative importance (91%), with only three studies finding no link to coexistence. Similarly, although education was considered in just 25 studies, 76% of them identified it as a crucial factor for coexistence.

Emerging themes associated with each social–ecological factor are summarised in Figure 5 and further discussed in the next section of this article. Example quotes of each theme can be found in Supporting Information S3. We found that several factors were highly interconnected in various ways. While we present them separately in the figure, the next section groups those that are most evidently linked to discuss how they interact to promote human–predator coexistence. Most factors were associated with coexistence in three to five different ways, but age and education showed little variation in their relationship to coexistence.

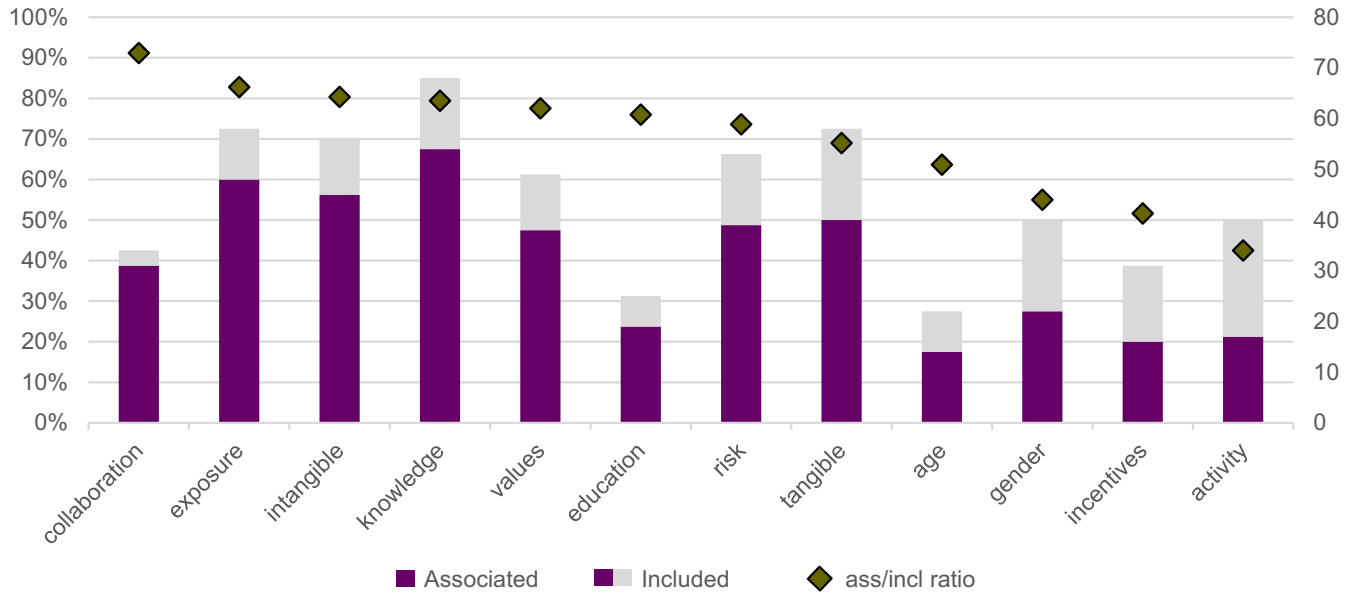

FIGURE 4 Number of times social–ecological factors (*X* axis) were included and found to be associated with coexistence displayed in the stacked bar chart (right axis) and relative importance (left axis) indicated as a percentage (association/inclusion ratio).

4 | DISCUSSION

Our results confirm that social–ecological factors can influence coexistence in nuanced ways across different contexts. This is a demonstration of how intertwined socio-cultural, political, economic and ecological domains create complex social–ecological systems (Bruskotter et al., 2015). Based on the relative importance of each factor, we found that community collaborations, diverse knowledge sources, exposure to predators, intangible benefits such as meaningful experiences and value orientations were the five most important contributors to coexistence. Although some factors were more studied than others, it is not necessarily because they are more relevant, but because they are more visible and accessible, which makes them easier to evaluate.

4.1 | Positive attributes and terms used to refer to predators

Our results reveal the positive aspects that people value about interacting with predators relate mainly to desirable qualities and symbolisms, human-like qualities, complex skills and traits, and spiritual attributes. Nonetheless, interactions with predators frequently involve strong and complex feelings and people may have polarised stands towards predator conservation (Lopes-Fernandes et al., 2016). They may support conservation due to their feelings of admiration and respect (for the predators' beauty, ecological role and cultural significance) or disapprove of conservation based on fear and hostile interactions (for the economic cost and potential harm to human safety they enforce) (Anthony & Tarr, 2019). It is also common for a person to hold neutral or ambivalent thoughts and an unclear position regarding predators' conservation (Drouilly et al., 2021).

Analysing positive terms and their potentially negative interpretations has shed light on the complex ways people relate to predators and how these perceptions align with broader worldviews and value orientations. Although all reviewed articles were in English, our data originated from diverse linguistic contexts, where subtleties may be lost in translation, potentially influencing the interpretation of these terms. For example, the term 'powerful' can be attributed diverse meanings, evoking admiration in some individuals but fear in others. Similarly, 'intelligent' and 'adaptable' are traits that generally command respect, yet farmers may find these very traits challenging when trying to protect their livestock. The term 'valuable' is particularly intriguing; it often denotes worth in various contexts, including traditional medicine, which can inadvertently encourage poaching and complicate efforts at coexistence. While promoting positive attributes may improve attitudes and behaviours, it is crucial to consider these diverse interpretations to avoid unintended negative consequences.

4.2 | Social–ecological factors

4.2.1 | Community collaborations

Collaboration among social actors was found to be very important for building coexistence. This factor was the one with the highest relative importance, despite being included as a variable in fewer than 50% of the studies. Several studies that did not explicitly focus on this factor nonetheless highlighted the importance of communication, trust, participation and collaboration for coexistence (Dechner, 2021; Dorresteijn et al., 2016). Effective collaboration, including democratic governance and consultations to social actors, enhances management solutions and their implementation (Chetri et al., 2020). Support

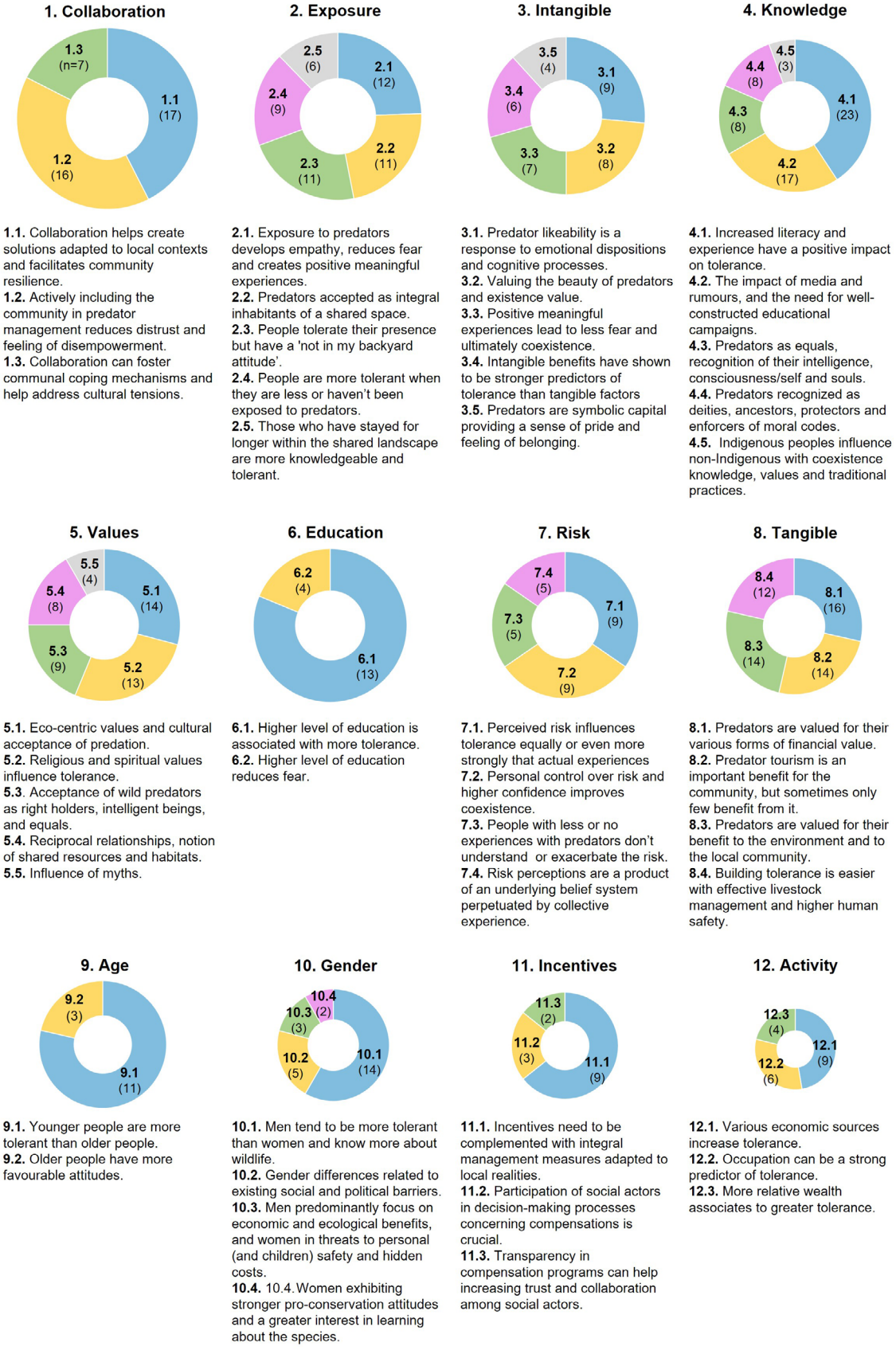

FIGURE 5 Social–ecological factors and the nuanced interpretations (themes) provided by the authors. The size of each pie chart reflects the factor's relative importance in the literature review conducted. Within each pie chart, themes are ordered by how often they were mentioned, with the number of studies that have mentioned those themes indicated in brackets.

from government, conservation agencies and community-based vigilance is recommended to boost satisfaction and reduce vulnerability (Boronyak et al., 2022; Cleary et al., 2021). Additionally, involving local social actors in management processes and co-creating context-specific strategies is advised to improve coexistence (Jacobsen et al., 2021; Meena et al., 2021). Collaboration also includes providing emotional support and financial aid to cope with livestock losses (Gebresenbet et al., 2018; Marino et al., 2021).

Building strong bonds and an environment of trust and empowerment among participants is crucial for effective collaboration. This can be challenging in areas with a history of low trust due to oppression, corruption or poverty (Dorresteijn et al., 2014). For example, conspiracy theories often arise from distrust, such as claims that state agencies are introducing predators into local areas. These introduced predators are said to be more 'domesticated' or 'extroverted' compared to the shyer local predators (Dhee et al., 2019; Ghosal et al., 2015). Establishing public trust in state agencies is essential for shaping risk perceptions and acceptance of predator populations (Cleary et al., 2021; Engel et al., 2016). Furthermore, collaboration can help bridge gaps between social groups with differing views and address cultural tensions (Bongi et al., 2022).

4.2.2 | Exposure, tangible and intangible benefits

The way exposure to predators influenced coexistence was highly variable across the publications. We found that some articles stated that increased exposure promoted coexistence (Fort et al., 2018; Gebresenbet et al., 2018; Ghosal et al., 2015), but other times it would deteriorate positive relations with predators (Bruskotter et al., 2017; Cleary et al., 2021). Cases where it would have a positive impact on coexistence were usually where people were habituated to living with predators and accepted the fact of living in a shared landscape (Arbieu et al., 2020; Dorresteijn et al., 2014; Zuluaga et al., 2021). The landscape provides a place for interactions, connections and proximity to wildlife (Dorresteijn et al., 2016), and acceptance can often be joined by a sense of pride and identification with predators, considering that they belong to the community, and therefore naturally coexist (Meena et al., 2021). People accepting predation as part of the reality of living close to nature consider that predators do not attack intentionally, some stating that '*they just take what they need*' (Dhee et al., 2019; Gebresenbet et al., 2018). According to these views, the trade-off of living in areas once inhabited by wildlife involves losing livestock to predators (Leveridge et al., 2021).

Exposure to predators can lead to more opportunities for both intangible and tangible benefits (Marino et al., 2021; Van Der Meer & Dullemont, 2021). Unexpected encounters in the wilderness can provide positive meaningful experiences and bring out emotions like happiness, amazement, interest and excitement (Leveridge et al., 2021; Marino et al., 2021). These experiences significantly enhance coexistence by increasing empathy, especially among individuals with eco-centric values, pro-conservation beliefs or a strong interest in understanding the species better (Ghasemi et al., 2021; Jacobsen et al., 2021; Slagle et al., 2019; Young et al., 2015). Some people also appreciated the aesthetic qualities of the species, which often contribute to the appeal of large predators as charismatic and flagship species in conservation programmes (Bowen-Jones & Entwistle, 2002). In a symbolic realm, predators can be seen as protective spirits that safeguard the land and families, offering a sense of security. In these cases, this belief is rooted in specific value orientations derived from traditional ecological knowledge (Ghosal et al., 2015; Jolly et al., 2022; Meena et al., 2021).

Intangible benefits were considered to predict coexistence more effectively than tangible ones ($N=6$). It was considered that studying beliefs and perceptions can better inform conservation efforts than focusing solely on socio-economic variables, which could lead to misleading results (Dechner, 2021; Jacobsen et al., 2021). We found that tangible benefits were mostly associated with economic value through predator tourism (Kusi et al., 2020; Ohrens et al., 2021; Van Der Meer & Dullemont, 2021). Nonetheless, locals who do not benefit directly from predator presence may oppose their conservation, making predator tourism an imperfect solution (Digun-Aweto et al., 2020; Ohrens et al., 2021). Predator tourism may also lead to further commodification of nature and wildlife, along with negative ecological impacts and a disconnection from local cultural values and meanings (Toncheva et al., 2021). A successful ecotourism model benefits conservation and the community when it operates on a small scale with minimal ecological impact and is locally initiated (Toncheva et al., 2021; Uduman et al., 2021). Predators also provide economic value through subsistence and trophy hunting, traditional medicine and occasionally as a source of food or fur (Mashele et al., 2021; Thorn et al., 2015). Additionally, they can be valued by the community for their role in removing pests, thieves and intruders from the environment (Dechner, 2021).

In contrast, a few articles reported more positive attitudes from people with less or no direct experiences with predators (Cleary et al., 2021; Ohrens et al., 2021; Western et al., 2019). An example of this would be urban populations being consistently more tolerant of carnivores than rural populations are (Bruskotter et al., 2017). On the same line, a few studies reported more tolerance in people believing that a predator population was decreasing or absent, and preferring species that were more cryptic and avoidant (Chetri et al., 2020). In fact, the sentiment of tolerating them but '*not in my backyard*' was highly repeated across the different studies (Parker et al., 2018; Zimmermann et al., 2005). This underscores the need to minimise the chances of human properties attracting predators by improving enclosures and fences, removing livestock carcasses and implementing other preventive measures (Marino et al., 2021). Nonetheless, it is important that these preventive measures are complemented with the promotion of positive experiences and perceptions (Bencin et al., 2016).

4.2.3 | Diverse knowledge, education and value orientation

The high relative importance and the level of attention given to knowledge and value orientations among the articles show how

education, previous experiences, cultural beliefs and emotional affiliations are increasingly becoming relevant for coexistence management (Dechner, 2021). Several studies ($N=23$) referred to how increased literacy in species' ecological role and complex behaviour fosters coexistence and brings up awareness and social discussion on the protection of species (Boronyak et al., 2022; Dechner, 2021; Meena et al., 2021). Hunters were often knowledgeable about predators, and interestingly, some even had a positive attitude towards coexistence (Thorn et al., 2015), but some felt excluded from conservation efforts, which can lead to illegal hunting and impairing coexistence (Bongi et al., 2022). Some articles ($N=17$) emphasised the need to address the impact of rumours and the media's role in accurate public information; therefore, well-planned educational campaigns were highly recommended (Arbieu et al., 2020; Carter et al., 2012). Nonetheless, some researchers raised concerns about their limited effect on deeply held beliefs and the fact that more knowledge does not always improve attitudes and that more knowledge does not always mean more positive attitudes (Slagle et al., 2012; Torres et al., 2020).

Eco-centric values among people were reported to help the cultural acceptance of predators and livestock predation based on an innate affiliation to all living things (Dechner, 2021). Predators being equals, having distinctive personalities, souls and a shared right to access resources are concepts highly related to the notion of constructing reciprocal relationships derived from traditional ecological knowledge (Ghosal et al., 2015). Coexistence is a result of people accepting reciprocity and mutualism and attempting to understand and empathise with predators (Toncheva et al., 2021). A few cases reported retaliatory killing or survival hunting of problematic individuals, but always using a respectful ritual and a ceremonial burial (Gebresenbet et al., 2018; Leveridge et al., 2021). Leveridge et al. (2021) reported that notions from traditional ecological knowledge permeated non-Indigenous beliefs, fostering greater tolerance. Their study suggested that this transfer occurred organically among those with a stronger sense of belonging to nature. Relational values towards wilderness aligned non-Indigenous individuals with Indigenous perspectives on the spiritual and cultural significance of predators, reinforcing the view of humans as part of a shared world.

Other publications highlighted the contribution from Indigenous and traditional ecological knowledge on coexistence (Gebresenbet et al., 2018; Ghosal et al., 2015). We found that predators were considered to embody a wide range of spiritual attributes that transcend their animal form (McKay et al., 2018). Predators were valued as deities, symbols of fertility, health, good fortune, compassion and power (Chetri et al., 2020; Toncheva et al., 2021). They can also be regarded as relatives with shared origins (Dhee et al., 2019; Jolly et al., 2022). Thanks to this, predators would frequently become representatives of family totems and local stories of the landscape (Leveridge et al., 2021) where they would be recognised as wise protectors who would never harm the righteous (Ghosal et al., 2015). This created a sense of control over negative outcomes of interactions with predators, as respecting each other and the ecosystem, avoiding being punished for wrong behaviour (Cleary et al., 2021).

Religious and spiritual values varied between the local communities included in the different studies. From a religious point of view, some believed that wild animals were part of God's creation, and so had intrinsic importance (Kumar et al., 2019; Mashele et al., 2021). Some even thought that to suffer a loss was good luck, and that the gods never take an animal from those who cannot afford the loss (Gebresenbet et al., 2018; Ghosal et al., 2015). Nonetheless, religion and cultural beliefs need to be addressed with caution when used to promote coexistence. It is not a long stretch to postulate that if a predator is a symbol of protection, or a representation of God, this could lead to poaching for body parts from the animal (Dhee et al., 2019). While some species could be favoured by spiritual beliefs, while others may not be so lucky to fall into a positive category (Mashele et al., 2021).

Only two articles mentioned the role of mythology and symbolism in coexistence. Nonetheless, research from other disciplines highlight their significant role in shaping human experiences and knowledge of landscapes and wildlife (Dayer et al., 2007; Levin, 1959; Myers, 1997), warranting further discussion. In some cultures, animals are revered as deities, granted mythological status and venerated for their qualities through storytelling (Benavides & Ibarra, 2021; Dhee et al., 2019). These stories serve as vital tools for transmitting knowledge and moral lessons, shaping people's beliefs and guiding their behaviours towards wildlife (Dayer et al., 2007). In Western culture, the term 'myth' has been used dismissively to describe fictional or unscientific discourse (Levin, 1959). However, in other cultures, myths help people make sense of natural phenomena, encode cultural values and transmit knowledge through language and symbolism (Myers, 1997).

In our literature review, mythical predators included the snow lion in Trans-Himalayan folklore and the weretiger in Indonesia, both of which foster a sense of protection and deep connection between local communities and large predators (Bhatia et al., 2021; McKay et al., 2018). The snow lion, or *seng ge*, carries strong positive symbolism, embodying fearlessness, pride, strength and sovereignty in the animal world. It is often associated with courageous men and believed to bring good fortune. Frequently mentioned in folk songs, the snow lion contrasts with real carnivores like wolves and snow leopards, which are also regarded as protective deities but are linked to livestock predation. This distinction likely reinforces the snow lion's overwhelmingly positive symbolism. Similarly, in Indonesia, weretigers are believed to be reincarnations of people or embodiments of ancestors, serving as village protectors who watch over their descendants. These mythological figures illustrate how cultural narratives shape human perceptions of predators, reinforcing their role as guardians rather than threats.

4.2.4 | Risk perceptions, economic incentives and main economic activity

The significant impact of perceived risk on attitudes towards predators has been well documented (Carter et al., 2012). Often, people

exacerbate the risks associated with living with predators, and this perception can be reinforced through collective discourse. A common theme in the literature is that people's sense of security affects how much they value native predators, with those feeling secure more likely to assign them higher intrinsic value (Amit & Jacobson, 2018). This was also observed in reverse, with those who perceive greater benefits from predators tending to view them as posing lower risks (Mashele et al., 2021). In African countries, local communities often share positive attitudes when they form partnerships with private entities or the government to manage and protect wildlife and natural resources, while also benefiting financially (Parker et al., 2018). Moreover, higher tolerance for predators is observed when government support mitigates the negative impacts on human and livestock safety (Van Der Meer & Dullemont, 2021).

While incentives are often highlighted as crucial for promoting coexistence, they are most effective when part of a comprehensive approach that includes social change initiatives (Meena et al., 2021). Researchers emphasise the need for integrative participatory processes involving local governance, education, preventive management strategies and even a community-based livestock insurance programme (Ohrens et al., 2021; Uduman et al., 2021). Criticisms of incentive programmes include a lack of awareness among farmers, discouragement due to the requirement for evidence of predator attacks (Young et al., 2015) and issues of trust and cooperation (Anthony & Tarr, 2019). Fraudulent claims and misuse of compensation schemes undermine these programmes, with some farmers feeling that compensation payments do not adequately reflect their emotional and time investment in livestock (Naughton-Treves et al., 2003).

Main economic activity was poorly associated with coexistence. Nonetheless, there still were a few studies that presented it as a strong predictor of coexistence ($N = 6$) under the argument that people develop different professional cultures and beliefs (Chetri et al., 2020; Naughton-Treves et al., 2003). In the case of farmers, main economic activity also indicates how much people depend on their livestock (Fort et al., 2018). The impact of losing livestock to predators on the household economy and coexistence may not be significant if farmers have other income sources (Jacobsen et al., 2021). Farmers who have less relative wealth and live in remote areas often have fewer opportunities to respond to damages caused by predators, leading to reduced tolerance (Bencin et al., 2016; Carter et al., 2012).

4.2.5 | Gender and age

In 14 studies, men were generally found to exhibit lower levels of fear, greater ecological knowledge, more eco-centric views and a higher interest in predators compared to women (Arroyo-Quiroz et al., 2017; Fort et al., 2018; McGovern & Kretser, 2015) However, the reasons behind these patterns are complex and vary across cultures. For example, there was one study claiming that women expressed higher pro-conservation attitudes and greater interest in learning about predators than men (Oražem et al., 2021). Women's greater expression of fear may be linked to heightened vulnerability due to increased workloads, economic hardship and concerns for physical and psychological safety (Bhatia et al., 2021; Doubleday & Rubino, 2021). Additionally, female perspectives were often underrepresented in studies where discussions were dominated by men, requiring significant encouragement for women to participate (Doubleday & Rubino, 2021). Another possibility is that the perception of men being more tolerant may be an artefact of the generally small sample sizes of female participants (Page-Nicholson et al., 2017).

Of the 14 studies examining age as a factor influencing coexistence, 11 found that younger individuals were more tolerant, largely attributing this to higher levels of education, which fosters greater awareness and access to information (Hacker et al., 2021; Meena et al., 2021). In contrast, three studies reported that older individuals were more tolerant, linking this to their greater experience and longer time spent in rural areas (Bongi et al., 2022; Torres et al., 2020; Uduman et al., 2021). As with gender, the role of age varies cross-culturally (Bleidorn et al., 2016), and the studies reviewed here span diverse cultural contexts. The fact that coexistence was sometimes associated with youth and education, while in other cases with experience and rural life, underscores the complexity of these factors. Rather than viewing gender and age as standalone contributors to coexistence, these attributes must be understood within broader social and demographic contexts, including economic situation, education level, cultural gender norms, power dynamics and local environmental histories. A more integral approach is needed to capture the interplay between these elements and how they shape human–wildlife relationships across different cultural landscapes.

4.3 | Study limitations

Firstly, the exclusive use of English search terms and English-only written articles inherently excludes possible valuable studies published in other languages, limiting the comprehensiveness of the review. The exclusion of grey literature, which can include valuable insights and practical observations, may also exclude important case studies and perspectives, particularly concerning Indigenous cultures and traditional ways. Additionally, relying on specific English words and common names for certain species may have unintentionally overlooked less well-known species relevant to human–predator coexistence and Indigenous viewpoints. Secondly, the relatively small number of papers reviewed ($n = 76$) could be attributed to these limitations, as well as the stringent inclusion criteria focusing on authors who approach the topic from a coexistence- rather than a conflict-oriented lens. Despite these limitations, the in-depth literature review provides valuable insights into the nuanced influence of social–ecological factors across different contexts, thereby contributing to a more comprehensive understanding of the social–ecological dynamics of human–predator coexistence.

4.4 | Gaps in knowledge and future research

Our review revealed biases and gaps in knowledge. Most studies originated from Northern Hemisphere countries, particularly the United States and Europe. Fewer than a third of the studies adopted a cross-cultural approach, and only one incorporated interdisciplinary methods that combined social and ecological sciences. Additionally, the relatively small number of studies reinforces the dominance of a conflict-oriented perspective, underscoring the need for more research that promotes coexistence and explores positive human–predator interactions.

Future research should address these gaps by focusing on the following:

- *Expanding geographic representation*: Most studies in this review originate from Northern Hemisphere countries, particularly the United States, Italy and India. More research is needed in regions where diverse cultures coexist with multiple predator species, especially where rural livelihoods are heavily dependent on agriculture and livestock (Araneda et al., 2021; Canney et al., 2021).
- *Cross-cultural and interdisciplinary research*: Future research should further explore how Indigenous and traditional worldviews and cultural legacies shape coexistence. Appropriate and respectful collaborations with representatives from Indigenous and Traditional Ecological Systems are crucial. These partnerships must avoid extractive practices and imbalanced power dynamics, instead fostering spaces that amplify Indigenous voices and knowledge (Latulippe & Klenk, 2020). Additionally, interdisciplinary methods also remain underutilised, and incorporating them could provide a more integrated understanding of human–predator interactions.
- *Comprehensive management*: Our methodologies did not allow us to determine the most effective combination of factors for fostering coexistence. Future research should explore how these factors interact across different contexts, integrating ecological conditions with the cultural norms and priorities of local communities. This approach will support the development of comprehensive, situated and long-term coexistence practices and solutions.

4.5 | Recommendations based on current knowledge

Our findings highlight that achieving successful human-predator coexistence requires a deep understanding of the social–ecological factors influencing these relationships. Each factor must be analysed within its broader socio-cultural, political and economic context, as their influence varies depending on the setting. Below, we outline key recommendations to guide management efforts:

- *Context-specific approaches*: Practitioners must recognise that social–ecological factors behave differently depending on the context and should tailor strategies accordingly.
- *Collaboration and trust-building*: Effective coexistence requires fostering collaboration among diverse social actors to address cultural tensions, build trust in state agencies and develop locally accepted agreements.
- *Nurture values aligned with sustainability*: Promote values that support sustainability beyond material benefits. While financial incentives like ecotourism and compensation are important, fostering relational and intrinsic values, emotions and meaningful personal experiences can play an even greater role in strengthening coexistence.
- *Encouraging coexistence through education and knowledge exchange*: Implement well-designed educational campaigns to enhance literacy and promote coexistence. Integrate diverse knowledge systems to broaden perspectives on positive human–predator relationships and create spaces for dialogue and collaboration between these systems to foster mutual learning and informed decision-making.
- *Embracing conflict in coexistence*: Recognising conflict as an inherent aspect of coexistence, rather than merely a problem to be solved, is crucial. This perspective enables the acknowledgment of mutual benefits, cultural significance and deep human–wildlife connections. Focusing on these positive interactions may help shape perceptions of predators in a culturally informed manner.

AUTHOR CONTRIBUTIONS

Rocío Almuna conceived the idea, analysed the data and led the writing of the manuscript. Cristina E. Ramalho, José Tomás Ibarra, Peter Speldewinde and Stephen D. Hopper supervised the research. All authors contributed critically to the design of the methodology, and working in the drafts and revisions based on reviewer feedback, and gave final approval for publication.

ACKNOWLEDGEMENTS

This research was conducted as part of Rocío Almuna's PhD thesis at The University of Western Australia. We gratefully acknowledge the financial support of the National Association of Research and Development (ANID, Chile), the Rufford Foundation and The Peregrine Fund. José Tomás Ibarra acknowledges the support from the Center for Intercultural and Indigenous Research CIIR—ANID/FONDAP 15110006, the Center of Applied Ecology and Sustainability CAPES—ANID PIA/BASAL AFB240003, and the Cape Horn International Center CHIC—ANID PIA/BASAL PFB210018. We thank María José López for assisting with data extraction. We also extend our thanks to two reviewers, including Dr. Lauren Harding, for their thoughtful and constructive feedback. This study was written on Noongar Country, the unceded lands of the Noongar People, the traditional custodians of the southwest of Western Australia. We acknowledge the enduring dedication of Noongar Elders, past and present, in caring for Country and Culture, including through the disruptions brought by colonisation. Open access publishing facilitated by The University of Western Australia, as part of the Wiley - The University of Western Australia agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

The dataset supporting this literature review has been deposited in the Dryad Digital Repository and is publicly available at https://doi.org/10.5061/dryad.rr4xgxdks. All data were extracted from previously published studies, which are cited in the manuscript and Supporting Information S1.

ORCID

Rocío Almuna https://orcid.org/0000-0002-6872-8562
José Tomás Ibarra https://orcid.org/0000-0002-7705-3974

REFERENCES

Amit, R., & Jacobson, S. K. (2018). Participatory development of incentives to coexist with jaguars and pumas. *Conservation Biology*, *32*(4), 938–948. https://doi.org/10.1111/cobi.13082

Anthony, B. P., & Tarr, K. (2019). The wolves are back! Local attitudes towards the recently re-populated grey wolf and wolf management in Bükk National Park, Hungary. *Acta Zoologica Academiae Scientiarum Hungaricae*, *65*(2), 195–214. https://doi.org/10.17109/AZH.65.2.195.2019

Araneda, P., Ohrens, O., & Ibarra, J. T. (2021). Socioeconomic development and ecological traits as predictors of human-bird conflicts. *Conservation Biology*, *36*(1), e13859. https://doi.org/10.1111/cobi.13859

Arbieu, U., Albrecht, J., Mehring, M., Bunnefeld, N., Reinhardt, I., & Mueller, T. (2020). The positive experience of encountering wolves in the wild. *Conservation Science and Practice*, *2*(5), e184. https://doi.org/10.1111/csp2.184

Arroyo-Quiroz, I., García-Barrios, R., Argueta-Villamar, A., Smith, R. J., & Salcido, R. P. G. (2017). Local perspectives on conflicts with wildlife and their management in the Sierra Gorda Biosphere Reserve, Mexico. *Journal of Ethnobiology*, *37*(4), 719–742. https://doi.org/10.2993/0278-0771-37.4.719

Artelle, K. A., Johnson, H. E., McCaffery, R., Schell, C. J., Williams, T. D., & Wilson, S. M. (2024). From causes of conflict to solutions: Shifting the lens on human–carnivore coexistence research. *Conservation Science and Practice*, *6*, e13239. https://doi.org/10.1111/csp2.13239

Artelle, K. A., Stephenson, J., Bragg, C., Housty, J. A., Housty, W. G., Kawharu, M., & Turner, N. J. (2018). Values-led management: The guidance of place-based values in environmental relationships of the past, present, and future. *Ecology and Society*, *23*(3), art35. https://doi.org/10.5751/ES-10357-230335

Benavides, P., & Ibarra, J. T. (2021). Uncanny creatures of the dark: Exploring the role of owls across human societies. *Anthropos*, *116*, 163–176. https://doi.org/10.2307/27284243

Bencin, H., Kioko, J., & Kiffner, C. (2016). Local people's perceptions of wildlife species in two distinct landscapes of Northern Tanzania. *Journal for Nature Conservation*, *34*, 82–92. https://doi.org/10.1016/j.jnc.2016.09.004

Bhatia, S., Redpath, S. M., Suryawanshi, K., & Mishra, C. (2020). Beyond conflict: Exploring the spectrum of human-wildlife interactions and their underlying mechanisms. *Oryx*, *54*(5), 621–628. https://doi.org/10.1017/S003060531800159X

Bhatia, S., Suryawanshi, K., Redpath, S. M., & Mishra, C. (2021). Understanding people's responses toward predators in the Indian Himalaya. *Animal Conservation*, *24*(3), 424–431. https://doi.org/10.1111/acv.12647

Blackwell, B. F., DeVault, T. L., Fernandez-Juricic, E., Gese, E. M., Gilbert-Norton, L., & Breck, S. W. (2016). No single solution: Application of behavioural principles in mitigating human-wildlife conflict. *Animal Behaviour*, *120*, 245–254. https://doi.org/10.1016/j.anbehav.2016.07.013

Bleidorn, W., Arslan, R. C., Denissen, J. J. A., Rentfrow, P. J., Gebauer, J. E., Potter, J., & Gosling, S. D. (2016). Age and gender differences in self-esteem—A cross-cultural window. *Journal of Personality and Social Psychology*, *111*(3), 396–410. https://doi.org/10.1037/PSPP0000078

Bongi, P., Baruffetti, M., Gazzola, A., & O'Mahony, K. (2022). Coexistence in ecological corridors: Understanding tolerance of wolves in the Northwestern Apennines, Italy. *Human Dimensions of Wildlife*, *28*(1), 1–17. https://doi.org/10.1080/10871209.2021.2010288

Boronyak, L., Jacobs, B., Wallach, A., McManus, J., Stone, S., Stevenson, S., Smuts, B., & Zaranek, H. (2022). Pathways towards coexistence with large carnivores in production systems. *Agriculture and Human Values*, *39*, 47–64. https://doi.org/10.1007/s10460-021-10224-y

Bowen-Jones, E., & Entwistle, A. (2002). Identifying appropriate flagship species: The importance of culture and local contexts. *Oryx*, *36*(2), 189–195. https://doi.org/10.1017/S0030605302000261

Brondízio, E. S., Aumeeruddy-Thomas, Y., Bates, P., Carino, J., Fernández-Llamazares, Á., Ferrari, M. F., Galvin, K., Reyes-García, V., Mcelwee, P., Molnár, Z., Samakov, A., & Shrestha, U. B. (2021). Locally based, regionally manifested, and globally relevant: Indigenous and local knowledge, values, and practices for nature. *Annual Review of Environment and Resources*, *47*, 481–509. https://doi.org/10.1146/annurev-environ-012220

Bruskotter, J. T., Singh, A., Fulton, D. C., & Slagle, K. (2015). Assessing tolerance for wildlife: Clarifying relations between concepts and measures. *Human Dimensions of Wildlife*, *20*(3), 255–270. https://doi.org/10.1080/10871209.2015.1016387

Bruskotter, J. T., Vucetich, J. A., Manfredo, M. J., Karns, G. R., Wolf, C., Ard, K., Carter, N. H., López-Bao, J. V., Chapron, G., Gehrt, S. D., & Ripple, W. J. (2017). Modernization, risk, and conservation of the world's largest carnivores. *Bioscience*, *67*(7), 646–655. https://doi.org/10.1093/biosci/bix049

Canney, A. C., McGough, L. M., Bickford, N. A., & Wallen, K. E. (2021). Systematic map of human-raptor interaction and coexistence research. *SocArXiv*. https://doi.org/10.31235/osf.io/zcmw6

Carlson, S. C., Dietsch, A. M., Slagle, K. M., & Bruskotter, J. T. (2020). The VIPs of wolf conservation: How values, identity, and place shape attitudes toward wolves in the United States. *Frontiers in Ecology and Evolution*, *8*, 6. https://doi.org/10.3389/fevo.2020.00006

Carter, N. H., & Linnell, J. D. C. (2016). Co-adaptation is key to coexisting with large carnivores. *Trends in Ecology & Evolution*, *31*(8), 575–578. https://doi.org/10.1016/j.tree.2016.05.006

Carter, N. H., Riley, S. J., & Liu, J. (2012). Utility of a psychological framework for carnivore conservation. *Oryx*, *46*, 525–535. https://doi.org/10.1017/S0030605312000245

Chetri, M., Odden, M., Devineau, O., McCarthy, T., & Wegge, P. (2020). Multiple factors influence local perceptions of snow leopards and Himalayan wolves in the central Himalayas, Nepal. *PeerJ*, *8*, 1–18. https://doi.org/10.7717/peerj.10108

Cleary, M., Joshi, O., & Fairbanks, W. S. (2021). Mapping and modeling the components of human tolerance for black bears in eastern Oklahoma. *Journal of Environmental Management*, *288*, 112378. https://doi.org/10.1016/j.jenvman.2021.112378

Dayer, A. A., Stinchfield, H. M., & Manfredo, M. J. (2007). Stories about wildlife: Developing an instrument for identifying wildlife value orientations cross-culturally. *Human Dimensions of Wildlife*, *12*(5), 307–315. https://doi.org/10.1080/10871200701555410

De Gregorio, V., Parola, G., Porrone, A., Poto, M. P., & Tsiouvalas, A. (2021). Learning from the indigenous law: The core values of

inclusion, coexistence and resilience. In O. de la Perez Fuente, M. Falcão, & J. D. Oliva Martínez (Eds.), *Struggles for recognition: Cultural pluralism and rights of minorities* (1st ed., pp. 339–355). Dysinson.

Dechner, A. (2021). Emotions and the tolerance of large carnivores: Pumas in a crop-based landscape in Brazil. *Environmental Conservation*, *48*(2), 93–99. https://doi.org/10.1017/S0376892920000533

Dhee, A., Linnell, J. D. C., Shivakumar, S., & Dhiman, S. P. (2019). The leopard that learnt from the cat and other narratives of carnivore-human coexistence in northern India. *People and Nature*, *1*(3), 376–386. https://doi.org/10.1002/pan3.10039

Dickman, A. J. (2010). Complexities of conflict: The importance of considering social factors for effectively resolving human-wildlife conflict. *Animal Conservation*, *13*(5), 458–466. https://doi.org/10.1111/j.1469-1795.2010.00368.x

Digun-Aweto, O., Van Der Merwe, P., & Saayman, M. (2020). Tolerance factors in human-wildlife conflicts in protected areas: The case of Cross River National Park, Cross River state Nigeria. *GeoJournal*, *87*, 349–361. https://doi.org/10.1007/s10708-020-10254-9

Dorresteijn, I., Hanspach, J., Kecskes, A., Latkova, H., Mezey, Z., Sugar, S., von Wehrden, H., & Fischer, J. (2014). Human-carnivore coexistence in a traditional rural landscape. *Landscape Ecology*, *29*(7), 1145–1155. https://doi.org/10.1007/s10980-014-0048-5

Dorresteijn, I., Milcu, A. I., Leventon, J., Hanspach, J., & Fischer, J. (2016). Social factors mediating human–carnivore coexistence: Understanding thematic strands influencing coexistence in Central Romania. *Ambio*, *45*(4), 490–500. https://doi.org/10.1007/s13280-015-0760-7

Doubleday, K. F., & Rubino, E. C. (2021). Tigers bringing risk and security: Gendered perceptions of tiger reintroduction in Rajasthan, India. *Ambio*, *51*, 1343–1351. https://doi.org/10.1007/s13280-021-01649-0

Drouilly, M., Nattrass, N., & O'Riain, M. J. (2021). Beauty or beast? Farmers' dualistic views and the influence of aesthetic appreciation on tolerance towards black-backed jackal and caracal. *PLoS One*, *16*, e0248977. https://doi.org/10.1371/journal.pone.0248977

Engel, M. T., Vaske, J. J., Bath, A. J., & Marchini, S. (2016). Predicting acceptability of jaguars and pumas in the Atlantic Forest, Brazil. *Human Dimensions of Wildlife*, *21*(5), 427–444. https://doi.org/10.1080/10871209.2016.1183731

Estes, J. A. (1996). Predators and ecosystem management. *Wildlife Society Bulletin*, *24*, 390–396.

Fort, J. L., Nielsen, C. K., Carver, A. D., Moreno, R., & Meyer, N. F. V. (2018). Factors influencing local attitudes and perceptions regarding jaguars *Panthera onca* and National Park conservation in Panama. *Oryx*, *52*(2), 282–291. https://doi.org/10.1017/S0030605317001016

Frank, B., & Glikman, J. A. (2019). Human-wildlife conflicts and the need to include coexistence. In B. Frank, J. A. Glikman, & S. Marchini (Eds.), *Human-wildlife interactions: Turning conflict into coexistence* (pp. 1–19). Cambridge Universiy Press.

Gebresenbet, F., Baraki, B., Yirga, G., Sillero-Zubiri, C., & Bauer, H. (2018). A culture of tolerance: Coexisting with large carnivores in the Kafa highlands, Ethiopia. *Oryx*, *52*(4), 751–760. https://doi.org/10.1017/S0030605316001356

Ghasemi, B., Landon, A. C., Miller, C. A., & Williams, B. D. (2021). Trust and emotions predict support for large carnivore recovery in the absence of real threats. *Society and Natural Resources*, *34*(10), 1318–1337. https://doi.org/10.1080/08941920.2021.1953202

Ghosal, S., Skogen, K., & Krishnan, S. (2015). Locating human-wildlife interactions: Landscape constructions and responses to large carnivore conservation in India and Norway. *Conservation and Society*, *13*(3), 265–274. https://doi.org/10.4103/0972-4923.170403

Graham, K., Beckerman, A. P., & Thirgood, S. (2005). Human-predator-prey conflicts: Ecological correlates, prey losses and patterns of management. *Biological Conservation*, *122*(2), 159–171. https://doi.org/10.1016/j.biocon.2004.06.006

Gross, E., Jayasinghe, N., Brooks, A., Polet, G., Wadhwa, R., & Hilderink-Koopmans, F. (2021). *A future for all: The need for human-wildlife coexistence*. WWF.

Hacker, C. E., Dai, Y., Cheng, Y., Zhang, Y., Zhang, Y., Miller, L. J., & Janecka, J. E. (2021). Determinants of herder attitudes towards the vulnerable snow leopard *Panthera uncia* in Yushu prefecture, China. *Oryx*, *55*(5), 783–790. https://doi.org/10.1017/S0030605319001315

Hill, C. M. (2021). Conflict is integral to human-wildlife coexistence. *Frontiers in Conservation Science*, *2*, 734314. https://doi.org/10.3389/fcosc.2021.734314

Ibarra, J. T., & Martin, K. (2015). Beyond species richness: An empirical test of top predators as surrogates for functional diversity and endemism. *Ecosphere*, *6*(8), 1–15. https://doi.org/10.1890/es15-00207.1

IPBES. (2024). In K. O'Brien, L. Garibaldi, A. Agrawal, E. Bennett, O. Biggs, R. Calderón Contreras, E. Carr, N. Frantzeskaki, H. Gosnell, J. Gurung, S. Lambertucci, J. Leventon, C. Liao, V. Reyes García, L. Shannon, S. Villasante, F. Wickson, Y. Zinngrebe, & L. Perianin (Eds.), *Summary for policymakers of the thematic assessment report on the underlying causes of biodiversity loss and the determinants of transformative change and options for achieving the 2050 vision for biodiversity*. IPBES Secretariat. https://doi.org/10.5281/zenodo.11382230

IUCN. (2023). *IUCN SSC guidelines on human-wildlife conflict and coexistence* (1st ed.). IUCN. https://iucn.org/resources/publication/iucn-ssc-guidelines-human-wildlife-conflict-and-coexistence-first-edition

Jacobsen, K. S., Dickman, A. J., Macdonald, D. W., Mourato, S., Johnson, P., Sibanda, L., & Loveridge, A. (2021). The importance of tangible and intangible factors in human–carnivore coexistence. *Conservation Biology*, *35*(4), 1233–1244. https://doi.org/10.1111/cobi.13678

Jolly, H., Satterfield, T., Kandlikar, M., & Suma, T. R. (2022). Indigenous insights on human–wildlife coexistence in southern India. *Conservation Biology*, *36*(6), 1–13. https://doi.org/10.1111/cobi.13981

Kansky, R., Kidd, M., & Fischer, J. (2021). Understanding drivers of human tolerance towards mammals in a mixed-use transfrontier conservation area in Southern Africa. *Biological Conservation*, *254*, 108947. https://doi.org/10.1016/j.biocon.2020.108947

Kansky, R., Kidd, M., & Knight, A. T. (2014). Meta-analysis of attitudes toward damage-causing mammalian wildlife. *Conservation Biology*, *28*(4), 924–938. https://doi.org/10.1111/cobi.12275

Katti, M. (1995). Conflicts or coexistence? *Current Science*, *69*(4), 305–307.

Kumar, N., Jhala, Y. V., Qureshi, Q., Gosler, A. G., & Sergio, F. (2019). Human-attacks by an urban raptor are tied to human subsidies and religious practices. *Scientific Reports*, *9*(1), 2545. https://doi.org/10.1038/s41598-019-38662-z

Kusi, N., Sillero-Zubiri, C., Macdonald, D. W., Johnson, P. J., & Werhahn, G. (2020). Perspectives of traditional Himalayan communities on fostering coexistence with Himalayan wolf and snow leopard. *Conservation Science and Practice*, *2*(3), e165. https://doi.org/10.1111/csp2.165

Latulippe, N., & Klenk, N. (2020). Making room and moving over: Knowledge co-production, indigenous knowledge sovereignty and the politics of global environmental change decision-making. *Current Opinion in Environmental Sustainability*, *42*, 7–14. https://doi.org/10.1016/J.COSUST.2019.10.010

Leveridge, M. C., Davis, A. Y., & Dumyahn, S. L. (2021). Evaluating attitudes towards large carnivores within the great bear rainforest. *Sustainability*, *13*(23), 13270. https://doi.org/10.3390/su132313270

Levin, H. (1959). Some meanings of myth. *Daedalus*, *88*(2), 223–231. https://www.jstor.org/stable/20026492?seq=5

Lopes-Fernandes, M., Soares, F., Frazão-Moreira, A., & Queiroz, A. I. (2016). Living with the beast: Wolves and humans through Portuguese literature. *Anthrozoös*, *29*(1), 5–20. https://doi.org/10.1080/08927936.2015.1060056

Marino, F., Kansky, R., Shivji, I., Di Croce, A., Ciucci, P., & Knight, A. T. (2021). Understanding drivers of human tolerance to gray wolves and brown bears as a strategy to improve landholder–carnivore coexistence. *Conservation Science and Practice*, *3*(3), e265. https://doi.org/10.1111/csp2.265

Mashele, N. M., Thompson, L. J., & Downs, C. T. (2021). Traditional health practitioners' and other community members' perceptions of vultures in the Kruger to canyons biosphere region, South Africa. *Journal of Raptor Research*, *55*(3), 340–358. https://doi.org/10.3356/JRR-20-34

McGovern, E. B., & Kretser, H. E. (2015). Predicting support for recolonization of mountain lions (*Puma concolor*) in the Adirondack park. *Wildlife Society Bulletin*, *39*(3), 503–511. https://doi.org/10.1002/wsb.557

McKay, J. E., St John, F. A. V., Harihar, A., Martyr, D., Leader-Williams, N., Milliyanawati, B., Agustin, I., Anggriawan, Y., Karlina, Y. A., Kartika, E., Mangunjaya, F., Struebig, M. J., & Linkie, M. (2018). Tolerating tigers: Gaining local and spiritual perspectives on human-tiger interactions in Sumatra through rural community interviews. *PLoS One*, *13*(11), 1–13. https://doi.org/10.1371/journal.pone.0201447

Meena, V., Johnson, P. J., Zimmermann, A., Montgomery, R. A., & Macdonald, D. W. (2021). Evaluation of human attitudes and factors conducive to promoting human-lion coexistence in the greater Gir landscape, India. *Oryx*, *55*(4), 589–598. https://doi.org/10.1017/S0030605319000760

Menzies, A. K., Bowles, E., McGregor, D., Ford, A. T., & Popp, J. N. (2024). Sharing indigenous values, practices and priorities as guidance for transforming human–environment relationships. *People and Nature*, *6*, 2109–2125. https://doi.org/10.1002/pan3.10707

Myers, L. (1997). Animal symbolism among the numa: Symbolic analysis of numic origin myths. *Journal of California and Great Basin Anthropology*, *19*(1), 32–49.

Naughton-Treves, L., Grossberg, R., & Treves, A. (2003). Paying for tolerance: Rural citizens' attitudes toward wolf depredation and compensation. *Conservation Biology*, *17*(6), 1500–1511. https://doi.org/10.1111/j.1523-1739.2003.00060.x

Ohrens, O., Tortato, F. R., Hoogesteijn, R., Sarno, R. J., Quigley, H., Goic, D., & Elbroch, L. M. (2021). Predator tourism improves tolerance for pumas, but may increase future conflict among ranchers in Chile. *Biological Conservation*, *258*, 109150. https://doi.org/10.1016/j.biocon.2021.109150

Oražem, V., Smolej, T., & Tomazic, I. (2021). Students' attitudes to and knowledge of brown bears (*Ursus arctos* L.): Can more knowledge reduce fear and assist in conservation efforts? *Animals*, *11*(7), 1958. https://doi.org/10.3390/ani11071958

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372*, n71. https://doi.org/10.1136/bmj.n71

Page-Nicholson, S. K., Marnewick, K. A., Beverley, G., Davies-Mostert, H. T., Watermeyer, J. P., & Parker, D. M. (2017). Socio-economic factors influencing attitudes of landowners towards free-roaming cheetahs. *African Journal of Wildlife Research*, *47*(2), 114–127. https://doi.org/10.3957/056.047.0114

Parker, D. M., Watermeyer, J. P., Davies-Mostert, H. T., Beverley, G., & Marnewick, K. (2018). Attitudes and tolerance of private landowners shape the African wild dog conservation landscape in the greater Kruger National Park. *Endangered Species Research*, *36*, 173–181. https://doi.org/10.3354/esr00905

Pascual, U., Balvanera, P., Anderson, C. B., Chaplin-Kramer, R., Christie, M., González-Jiménez, D., Martin, A., Raymond, C. M., Termansen, M., Vatn, A., Athayde, S., Baptiste, B., Barton, D. N., Jacobs, S., Kelemen, E., Kumar, R., Lazos, E., Mwampamba, T. H., Nakangu, B., … Zent, E. (2023). Diverse values of nature for sustainability. *Nature*, *620*(7975), 813–823. https://doi.org/10.1038/s41586-023-06406-9

Pinto-Marroquin, M., Castaño-Uribe, C., Pérez-Torres, J., Aristizabal, J. F., Santos-Fita, D., Chaparro, A. B. R., & Serio-Silva, J. C. (2022). Potential conflict as an opportunity for coexistence: Cosmovision and attitudes of Arhuaco people towards jaguars. *Ethnobiology and Conservation*, *11*, 1–27. https://doi.org/10.15451/ec2022-11-11.21-1-27

Pooley, S., Bhatia, S., & Vasava, A. (2020). Rethinking the study of human – Wildlife coexistence. *Conservation Biology*, *35*(3), 784–793. https://doi.org/10.1111/cobi.13653

Pullin, A. S., & Stewart, G. B. (2006). Guidelines for systematic review in conservation and environmental management. *Conservation Biology*, *20*(6), 1647–1656. https://doi.org/10.1111/j.1523-1739.2006.00485.x

Riger, S., & Sigurvinsdottir, R. (2016). Thematic analysis. In J. Leonard & D. Glenwick (Eds.), *Handbook of methodological approaches to community-based research: Qualitative, quantitative, and mixed methods* (pp. 33–41). Oxford University Press.

Roemer, G. W., Gompper, M. E., & Van Valkenburgh, B. (2009). The ecological role of the mammalian mesocarnivore. *Bioscience*, *59*(2), 165–173. https://doi.org/10.1525/bio.2009.59.2.9

Sillero-Zubiri, C., & Laurenson, K. (2001). Interactions between carnivores and local communities: Conflict or co-existence? In J. L. Gittleman, S. M. Funk, D. W. Macdonald, & R. K. Wayne (Eds.), *Carnivore conservation* (pp. 282–312). Cambridge University Press. https://www.researchgate.net/publication/260707232

Slagle, K. M., Bruskotter, J. T., & Wilson, R. S. (2012). The role of affect in public support and opposition to Wolf Management. *Human Dimensions of Wildlife*, *17*, 44–57. https://doi.org/10.1080/10871209.2012.633237

Slagle, K. M., Wilson, R. S., Bruskotter, J. T., & Toman, E. (2019). The symbolic wolf: A construal level theory analysis of the perceptions of wolves in the United States. *Society and Natural Resources*, *32*(3), 322–337. https://doi.org/10.1080/08941920.2018.1501525

Thorn, M., Green, M., Marnewick, K., & Scott, D. M. (2015). Determinants of attitudes to carnivores: Implications for mitigating human-carnivore conflict on south African farmland. *Oryx*, *49*(2), 270–277. https://doi.org/10.1017/S0030605313000744

Toncheva, S., Fletcher, R., & Turnhout, E. (2021). Convivial conservation from the bottom up: Human-bear cohabitation in the Rodopi Mountains of Bulgaria. *Conservation and Society*, *20*(2), 124. https://doi.org/10.4103/cs.cs_208_20

Torres, R. T., Lopes, D., Fonseca, C., & Rosalino, L. M. (2020). One rule does not fit it all: Patterns and drivers of stakeholders perspectives of the endangered Iberian wolf. *Journal for Nature Conservation*, *55*, 125822. https://doi.org/10.1016/j.jnc.2020.125822

Uduman, A., Hagerman, S., Kroc, E., Watson, A., Kittle, A., & Burton, A. C. (2021). Attitudes towards the Sri Lankan leopard *Panthera pardus kotiya* in two rural communities. *Oryx*, *56*, 1–9. https://doi.org/10.1017/S0030605321000247

Van Der Meer, E., & Dullemont, H. (2021). Human-carnivore coexistence: Factors influencing stakeholder attitudes towards large carnivores and conservation in Zimbabwe. *Environmental Conservation*, *48*(1), 48–57. https://doi.org/10.1017/S0376892920000491

Vaske, J., Decker, D., & Manfredo, M. (1995). Human dimensions of wildlife management: An integrated framework for coexistence. In R. L. Knight & K. J. Gutzwiller (Eds.), *Wildlife and recreationist: Coexistence through management and research* (pp. 33–50). Island Press.

Western, G., Macdonald, D. W., Loveridge, A. J., & Dickman, A. J. (2019). Creating landscapes of coexistence: Do conservation interventions promote tolerance of lions in human-dominated landscapes? *Conservation and Society*, *17*(2), 204–217. https://doi.org/10.4103/cs.cs_18_29

Wilder, B. T., O'Meara, C., Monti, L., & Nabhan, G. P. (2016). The importance of indigenous knowledge in curbing the loss of language and biodiversity. *Bioscience*, *66*(6), 499–509. https://doi.org/10.1093/biosci/biw026

Wooltorton, S., Collard, L., & Horwitz, P. (2019). Living water: Groundwater and wetlands in Gnangara, Noongar boodjar. *PAN: Philosophy Activism Nature*, *14*, 5–23.

Young, J. K., Ma, Z., Laudati, A., & Berger, J. (2015). Human–carnivore interactions: Lessons learned from communities in the American west. *Human Dimensions of Wildlife*, *20*(4), 349–366. https://doi.org/10.1080/10871209.2015.1016388

Zimmermann, A., Walpole, M. J., & Leader-Williams, N. (2005). Cattle ranchers' attitudes to conflicts with jaguar *Panthera onca* in the Pantanal of Brazil. *Oryx*, *39*(4), 406–412. https://doi.org/10.1017/S0030605305000992

Zuluaga, S., Vargas, F. H., & Grande, J. M. (2021). Integrating socio-ecological information to address human-top predator conflicts: The case of an endangered eagle in the eastern Andes of Colombia. *Perspectives in Ecology and Conservation*, *19*(1), 98–107. https://doi.org/10.1016/j.pecon.2020.10.003

SUPPORTING INFORMATION

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

Data S1.

Supplementary Information S1. List of articles included in the review.

Supplementary Information S2. Full list of countries and species covered in our literature review.

Supplementary Information S3. Quotes of themes associated to social ecological factors.

How to cite this article: Almuna, R., Ramalho, C. E., Ibarra, J. T., Speldewinde, P., & Hopper, S. D. (2025). Global perspectives, local solutions: Improving human–predator coexistence through collaboration, meaningful experiences and cross-cultural knowledge. *People and Nature*, *00*, 1–17. https://doi.org/10.1002/pan3.70098