

Non-material contributions of nature expressed by former tourists of Mount Kilimanjaro, Tanzania

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Abstract

1. Nature-based tourism provides an outlet for people to experience non-material nature's contributions to people (NCP) and can even promote care for nature. Yet, the literature on NCP is still dominated by studies on regulating and material NCP, with limited research on non-material contributions.
2. Semi-structured interviews and photo-elicitation methods were conducted online with 38 former tourists who have hiked Mount Kilimanjaro, Tanzania, to investigate NCP experiences during their hiking journey. Drawing on the guiding principles of the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), an interwoven approach was used to link context-specific NCP expressed by tourists to the generalizing perspective.
3. Ten context-specific non-material NCP emerged including *Aesthetic experiences*; *Learning and life-changing perspectives*; *New and unique experiences*; and *Social cohesion and bonding*. All context-specific NCP were linked back to the generalizing perspective, with most NCP falling under the generalizing category of *Physical and psychological experiences*.
4. This paper reveals the unique and diverse ways that nature contributes to people's lives, promoting the visibility of multiple perspectives and their incorporation into biodiversity conservation and sustainable management strategies. Through an interwoven approach, NCP can be compared on a universal scale while respecting the context-specificity of human–nature interactions across different social-ecological contexts.

KEYWORDS

cultural ecosystem services, mountains, nature-based tourism, nature's contributions to people (NCP), non-material, photovoice, relational values, social-ecological system

1 | INTRODUCTION

Nature-based tourism can foster a myriad of positive outcomes for both people and nature (Winter et al., 2019). Not only does nature-based tourism offer opportunities to boost the economic livelihoods

and social well-being of local communities through increased employment and revenue (Hill et al., 2006), but it can also provide tourists with a variety of non-material benefits experienced through recreation and tourism-related activities. Intangible aspects of nature such as aesthetic experiences, inspiration, learning and social

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relations have been identified by previous studies as beneficial contributions of nature that are often expressed and valued by tourists (Clemente et al., 2019; Gosal et al., 2018; Leung et al., 2018; Müller et al., 2019; Rossi et al., 2020).

Nature's benefits experienced through nature-based tourism can promote care for nature (Schild, 2019; Soga & Gaston, 2016) and nurture human–nature connectedness (Pearce et al., 2017). In a relational turn for sustainability science, it has become increasingly recognized that care *for* and connectedness *with* nature are vital for successful conservation and sustainability transformations (Ives et al., 2018; Riechers et al., 2021; West et al., 2018). Negative consequences of nature-based tourism have also been documented, including conflict, competing use of resources and even loss of cultural practices and traditions of local communities (Thapa et al., 2022; Winter et al., 2019). If implemented and maintained with local people in mind, the costs of nature-based tourism can be reduced while the benefits can be maximized (Biggs et al., 2012; Thapa et al., 2022). Such benefits can be understood through the concept of nature's contributions to people (NCP).

NCP is defined as 'all the contributions, both positive and negative, of living nature (diversity of organisms, ecosystems, and their associated ecological and evolutionary processes) to people's quality of life' (Díaz et al., 2018, p. 270). Positive (or beneficial) contributions are all the benefits of nature to people, whereas negative (or detrimental) contributions are the losses or detriments that people derive from nature, such as disease transmission and predation (Díaz et al., 2018; Pascual et al., 2017). Building upon the ecosystem services concept, NCP aims for a more inclusive and pluralistic approach (Hill et al., 2021; Pascual et al., 2017). Developed by the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), the NCP framework consists of 18 generalizing categories in three intertwining groups: *regulating*, *material* and *non-material* (IPBES, 2018a, 2019). Regulating contributions are aspects of nature that regulate environmental conditions, such as water quality or pollination (Aguilera-Alcalá et al., 2020). Material contributions are elements from nature that directly contribute to people's physical existence through supplies, such as food or energy (Aguilera-Alcalá et al., 2020). Non-material contributions are 'nature's effects on subjective or psychological aspects underpinning people's quality of life' (Díaz et al., 2018, p. 270), such as learning or aesthetic experiences. Although non-material NCP are often compared to the 'cultural ecosystem services' (CES), culture can permeate through and across all three NCP groups (Díaz et al., 2018).

In addition to the 18 generalizing categories, the NCP approach also recognizes the importance of context-specific perspectives. Through a context-specific lens, the framework provides space for understanding alternative ways in which people express NCP, which may not fit into pre-defined categories. Hill et al. (2021) encourage taking an '*interwoven approach*' by combining both generalizing and context-specific perspectives in NCP research. While the generalizing categories enable the identification of NCP status and trends across the world, the context-specific perspective allows us to examine the same places through other worldviews or knowledge

systems. The pluralism of the NCP concept recognizes the many definitions of nature that exist across different worldviews, knowledges and ways of being.

While most studies have focused on regulating and material NCP, there has been limited attention to non-material contributions (Aguilera-Alcalá et al., 2020; Garcia Rodrigues et al., 2022; Hevia et al., 2017). Thus, non-material NCP are often left out of formal decision-making processes (Milcu et al., 2013), resulting in an underestimation of the full value of nature to society (Adams & Morse, 2019). In a literature review on NCP in mountains, Martín-López et al. (2019) found that non-material was the least studied NCP group, with only 3.8 percent of studies focusing only on non-material NCP. One explanation behind the underrepresentation of non-material NCP could be linked to their intangible and subjective nature, making them inherently difficult to measure (Milcu et al., 2013). Most research on NCP in mountains has been conducted in Europe, with limited studies conducted in Africa, Asia and Latin America (Martín-López et al., 2019). To fully understand their beneficial contributions to society, further research on the NCP provided by mountains in Africa is needed. Of the few studies that have studied NCP in African mountains, including Mount Kilimanjaro, Tanzania (see Kijazi & Kant, 2010; Masao et al., 2022), mostly regulating and material NCP have been assessed. In these studies, tourists were not included.

In a review on tourists' valuation of nature in protected areas (among them represented as ecosystem services/NCP), Gross et al. (2023) found that most studies have used quantitative and monetary approaches, calling for more studies that use qualitative elicitation methods. This study aims to address these research gaps by taking an interwoven and qualitative approach to identify non-material NCP expressed by former tourists at Mount Kilimanjaro. This aim is addressed through the following two research objectives: (a) identify the beneficial NCP expressed by former tourists at Mount Kilimanjaro; and (b) connect the context-specific NCP expressed by former tourists to the generalizing NCP.

2 | METHODS

2.1 | Study site: Mount Kilimanjaro, Tanzania

Mount Kilimanjaro is an ancient volcano located 300 km south of the equator in Tanzania. It is the highest freestanding mountain in the world, reaching 5895 m in altitude. The mountain is home to around 2500 plant species (Masao et al., 2022), including endemic and endangered species. Due to the altitudinal gradient and, hence, the climate gradient, there is a uniquely broad range of vegetation types and high biodiversity (Hemp & Hemp, 2018; Peters et al., 2019). The vegetation types consist of: upper alpine and nival zone bare of vegetation (>4600 m); alpine *Helichrysum* vegetation (4000–4600 m); subalpine *Erica* bushland and forest (3200–4000 m); upper montane *Ocotea* (Camphor) forest (2800–3200 m); middle montane *Ocotea* (Camphor) forest (1800–2800 m); submontane and lower montane

forest (1100–1800m); and lowland forest, savanna (700–1100m) (Hemp et al., 2018). The relatively mild climate in the lower montane zone accommodates smallholder and commercial farming. Mount Kilimanjaro is one of the main tourist attractions in Tanzania, with approximately 50,000 people attempting to climb to the peak per annum (Hemp et al., 2018; TANAPA, 2023). Approximately 90% of hikers are international (NBS, 2020). Tourism contributes a substantial amount to the local and wider Tanzanian economy (Kijazi & Kant, 2010; Masao et al., 2022).

2.2 | Data collection

From May to September 2021, 38 semi-structured interviews were conducted online with former tourists who have climbed Mount Kilimanjaro and, on average, lasted around 45 min. Purposeful sampling was used to target previous hikers through various websites and social media platforms. Snowball sampling was used to gather more participants. The interview guide was structured into three sections: (i) participants' general experience, expectations and motivations for hiking Mount Kilimanjaro; (ii) perceived contributions of nature at Mount Kilimanjaro; and (iii) socio-demographic information. Photo-elicitation was used to enrich the data with visual material and invoke storytelling and memories through imagery (Harper, 2002). Participants were asked to share photographs from their experience hiking the mountain during the interview according to four criteria:

(a) the most pleasant or beautiful aspect of nature; (b) the most memorable experience; (c) your relationship with nature; and (d) an aspect of how nature contributes to your quality of life (see Figure 1). Participants were given the option to provide one photograph for each criterion or one photograph that fits all criteria. During the interview, participants were asked to explain why they chose each photograph. The narrative behind the photos was used to further elicit NCP. The full interview guide and photo-elicitation criteria form are provided in Supporting Information S1 and S2.

Human research ethics clearance was obtained from the Ethical Review Board of Leuphana University. Prior to interviews, the purpose of the research was explained via a written Participant Information Sheet and Declaration of Consent form provided over email prior to the interview (Supporting Information S3) and then again verbally at the start of the interview. With participant consent, interviews were recorded so that they could be transcribed. Notes were taken during one interview where consent to record was not obtained. Some participants also provided written consent to use the photos provided in the research outcomes.

2.3 | Data analysis

All recorded interviews were transcribed and imported into MAXQDA 2020 (Kuckartz & Rädiker, 2019). Content analysis was used to categorize and code context-specific NCP by identifying trends and



FIGURE 1 Four examples of photos that participants shared based on each criterion. Photograph (a): the most pleasant or beautiful aspect of nature (interviewee 34); Photograph (b): the most memorable experience (interviewee 10); Photograph (c): your relationship with nature (interviewee 1); and Photograph (d): (an aspect of) how nature contributes to your quality of life (interviewee 35).

patterns of words used (Vaismoradi et al., 2013). An intercoder agreement was undertaken between two of the researchers to reduce bias and improve the quality of the coding process (Campbell et al., 2013). First, the researchers used an inductive approach to independently review one interview transcript and develop an initial coding scheme. Second, the researchers discussed these categories to reconcile any differences. Third, the researchers used a consolidated coding scheme to independently apply coding to another interview transcript. This process was repeated until the final coding scheme was agreed upon. Finally, the coding scheme was applied to all transcripts by the main author (Stemler, 2000). Taking an interwoven approach, context-specific NCP were then linked back to the generalizing NCP categories according to the IPBES conceptual framework.

2.4 | Limitations

Online methods were applied due to COVID-19 constraints, and participation was therefore limited to those who have steady internet access. As the interview was conducted in English, the study was limited to English-speaking participants. Although attempts were made to acquire equal representation from people across continents, most participants were based in North America and Europe, which is representative of the population hiking Mount Kilimanjaro (Peaty, 2012; Zella Adili & Ngonyali Robert, 2016) (see Supporting Information S4). As some participants had not visited Mount Kilimanjaro for decades, responses may have been impacted by a lack of memory and a potentially differing perception of the mountain due to ecological changes over time. To account for this, photo-elicitation was used to stimulate the memories of participants. Moreover, the wording of some interview questions may have influenced the results since they were targeted towards certain NCP (full interview guide in Supplementary Information S1). For example, there was one question about 'the most beautiful aspect of nature' that would have biased participants to mention aesthetic experiences.

3 | RESULTS

3.1 | Socio-demographic profile

The age of participants ranged from 22 to 72 years old, with the median age being 42. Gender representation consisted of 21 men and 17 women. Most participants were from the Global North ($n=31$), with only seven participants from the Global South.

3.2 | Non-material NCP: Weaving the generalizing and context-specific perspective

Fourteen context-specific NCP categories were identified, with most falling under the *non-material* NCP category. Two material NCP

of *Food supply* and *Energy* and two regulating NCP of *Fresh water* and *Fresh air* supply were mentioned by some participants. However, these were mostly perceived as NCP for local communities rather than the tourists themselves. The 10 non-material NCP were all linked back to the generalizing categories of *Learning and inspiration*; *Maintenance of options*; *Physical and psychological experiences* and *Supporting identities*. Table 1 provides a summary of the interwoven approach and example verbatims of quotes that were linked to each context-specific NCP category and relevant generalizing NCP. Supporting Information S5 provides a list of full definitions of the generalizing NCP categories proposed by IPBES.

3.3 | Learning and inspiration

Learning and inspiration were linked to the context-specific NCP of *Learning and life-changing perspectives*, which refers to the different levels of learning that can be experienced by and through nature, from education on different species to gaining new profound insights that can influence one's outlook on life. One aspect of this NCP refers to the biocultural knowledge and understanding of nature acquired by tourists during their hiking experience. Participants mentioned that the diversity of ecosystem types had an impact on their understanding of nature. Participants appreciated the cultural exchange with local people fostered by singing, storytelling and togetherness in nature. Participants learnt a lot about the native species of the mountain from their tour guides. Some participants also referred to the influence of nature on their life perspective and personal development, which continued after returning from their hiking journey. One participant demonstrates this in the following quote: 'I felt small and I felt somehow overlooking the world, which is quite true for that area of the world at least...the mountain itself will exist, whether I exist or not...So I'm a very, very small, small part of something bigger, complex, beautiful (interviewee 32)'.

3.4 | Physical and psychological experience

Physical and psychological experiences were linked to the following context-specific NCP categories: *Aesthetic experiences*; *Challenging experiences*; *New and unique experiences*; *Therapeutic and restorative experiences*. *Aesthetic experiences* are the pure enjoyment of the aesthetic appearance and beauty of nature. Participants often mentioned this NCP, as they described the beautiful views and scenery of nature as one of the key benefits of their experience. One participant expressed this in the following quote: 'Like, how lucky am I? This is so beautiful. I've never physically seen a tree like this ever...And I think that to me is what beauty is. It's something that stands out of the ordinary' (interviewee 2). This encapsulates both the NCP categories of *Aesthetic experiences* and *New and unique experiences*.

Challenging experiences refer to the provision by nature of opportunities for humans to seek challenges that test their mental

TABLE 1 Interwoven approach: linking the context-specific NCP to the generalizing NCP.

Generalizing NCP (IPBES, 2019).	Context-specific NCP	Examples
15. Learning & inspiration	Learning and life-changing perspectives	'And that can be a beautiful thing to understand that, you know, nature is not just for us. It's something that we appreciate. It's a thing that we love. It's a thing that we can feel connected to. But it exists on its own without us...it does not need to exist just because of our human connection to it' (interviewee 24)
16. Physical & psychological experiences	Aesthetic experiences	'And this is how we started the day with a beautiful sunrise, beautiful colours, with a huge like a blanket or carpet of clouds in the bottom, which was really nice. So this is one of the things that I really like about climbing mountains or nature to be able to see this and to start the day with a beautiful sunrise like this' (interviewee 8)
	Challenging experiences	'Because I'm at the top and...I am still alive and I'm also holding the rainbow flag...I remember it was the last part of the hike, it was quite difficult...it was so cold and also very windy...And then finally when the sun came, you know, we reached like the rim of the crater and then 1 h later, the most high part of the crater. So, of course...I was happy and satisfied...that I could say I made this. I'm there' (interviewee 35)
	New and unique experiences	'...plants you'll see that are not anywhere else in the world...And you are like, wow, that looks like a palm tree. But it was just different...And there were hundreds of them, thousands of them all around you. And you are like, what kind of trippy mushroom land am I in? So it was interesting...the transition of like five different climates...I never saw that in Nepal like when I was in Everest base camp, there was nothing like the change of scenery like that' (interviewee 25)
	Therapeutic and restorative experiences	'...I think about where I am in my life and I think about my connection to technology, right?...this thing does not work up there...there's no Wi-Fi, there's no cell...but this...calm that came after like two or 3 days on the mountain of being unplugged and suddenly not worrying about the email... There was just kind of like this interesting calm that I did not know was missing' (interviewee 18)
17. Supporting identities	Connectedness with nature	'Yeah, just being really immersed in it and feeling very connected to it because you are literally connecting with it, interfacing, climbing, stepping over, moving through, touching. That was the most intimate part of the climb' (interviewee 26)
	Sense of place	'Because it's amazing. I'm so, so connected there. I feel happy. I feel peaceful. That's just like returning home, filling my soul' (interviewee 1)
	Social cohesion and bonding	'I think, part of why Dad wanted to have the whole trip in the first place, because sharing that was very bonding for us, too... And after that trip, we were bonded and connected... since the end of that trip of Kilimanjaro, we have basically been best friends. We are very actively in each other's life. And I love seeing him... this Kilimanjaro trip is really what reinvented our relationship and brought us together again. That was hugely important... probably one of the most important weeks of my life' (interviewee 26)
	Spiritual	'But I saw this and I felt this immense, enormous presence around me. And you can call it God, the universe, the spirit of the mountain, whatever label you choose to use. But I felt like I belong here, and I felt hope' (interviewee 18)
18. Maintenance of options	Intergenerational benefits	'But concerns...thinking of my children and my grandchildren, where are they going to be able to enjoy the possibilities of being in the nature in the same form that I have been, if you have places too much crowded?...that is a question mark that I have for the future. I do not know how that is going to be solved' (interviewee 12)

Abbreviation: NCP, nature's contributions to people.

and physical capabilities, often resulting in a sense of achievement. Some participants expressed their motivation to climb the mountain as a personal challenge for themselves: 'So I just, I was just like the day before that I really suffered. And then the morning when I woke up in the day this picture was taken. And why I feel it contributes to the

quality of life is it just showed me how resilient I could be' (interviewee 2). Participants often described a sense of achievement associated with overcoming the challenge of hiking Kilimanjaro, which would not be possible without persevering through the required physical exertion. One participant exemplifies this: 'I mean, that was for

me life reaffirming...I had a very different sort of mental mission going on...it wasn't just about getting up the mountain, it was...finding some strength, inner strength in myself. I had...I don't know, I just discovered a strength in myself that I didn't know I had at that time' (interviewee 7).

New and unique experiences are the provision by nature of new and unique opportunities for the human experience. Participants often mentioned the 'uniqueness' of nature at Mount Kilimanjaro, mostly referring to the diversity of ecosystems that they had never seen before: '*...the opportunity to start so low and then to be able to see that big difference...in climate zones...at the beginning it was like a cloud forest...very humid with the trees that had big leaves. And then...it was bigger trees, older trees. And as soon as you start gaining altitude, then there was less oxygen, a little bit colder. It was less smaller trees and different vegetation. So to be able to see that within that little amount of time...this is the amazing part of Kilimanjaro that you can see that within only a couple of days...So this opportunity to see that in Kilimanjaro is what makes it unique...*' (interviewee 8). Participants also referred to seeing these unique and strange-looking plants they had never witnessed before, which made them feel as if they were on another planet, often describing the landscape as '*magical, majestic, other-worldly or like being on Mars*'.

Therapeutic and restorative experiences were another context-specific NCP mentioned by participants, referring to nature's opportunities for therapeutic and restorative benefits such as healing, stress relief and relaxation. Participants mentioned the solitude and peacefulness of walking through nature, which helped to relax their minds. One participant elaborates on this: '*The biggest benefit? Just being present, you know, when you're walking, you're totally present, your feet are in the mud and the rain is down your back and you're totally present and it's peaceful and the silence...that's just like no other. There's no sound. You can hear the flies and it's just it's a hollow silence, it's huge...And that just gives people time to just be really present and in their hearts and in their bodies...when I first went back, I just felt like a jigsaw going back together again. My body, mind, soul*' (interviewee 1).

For some, this was quite an intense and emotional '*healing*' journey. One participant shared this notion of getting in touch with their emotions and coping with the loss of a loved one: '*And on a personal note, I felt my brother-in-law who had passed away. I felt him next to me, like smiling, like I just felt him there in this moment, just like sharing this with me. And I just, I remember kind of like laughing and crying at the same time. It was almost like a wet rag, just like wringing out these emotions*' (interviewee 18).

3.5 | Supporting identities

Supporting identities was linked to four context-specific NCP categories: *Connectedness with nature*; *Sense of place*; *Social cohesion and bonding*; and *Spiritual*. *Connectedness with nature* refers to the opportunities for humans to develop or nurture a feeling of connectedness with their natural surroundings. Many participants mentioned chasing this feeling of human–nature connectedness, which was often missing from their everyday lives: '*...technology disconnects*

us from other things and being in nature in these beautiful areas [like] Kilimanjaro...it really gives us opportunity to really connect us with nature with which we are surrounded...' (interviewee 8). Another participant describes the journey of connectedness with nature as the hike progressed: '*...when I first got there, I felt like a bit of an outsider. But as we progressed, I felt I was sort of welcomed by nature and became a bit more part of it*' (interviewee 10).

Sense of place refers to the opportunities for humans to develop a sense of belonging or feeling at 'home' in nature. The few participants that expressed this NCP said they felt like being home in nature at Mount Kilimanjaro: '*Because it's amazing. I'm so, so connected there. I feel happy. I feel peaceful. That's just like returning home, filling my soul*' (interviewee 1). This participant expressed *Sense of place* as an NCP, as they used to live in Kenya and could see Mount Kilimanjaro from their home. Another participant who grew up in Tanzania shared a similar sentiment: '*And I think that's what I feel when I see the mountain, when I come back and it's like, oh yes, I'm home, like the mountain's there and it's staying there*' (interviewee 16).

Social cohesion and bonding refer to the basis of nature for humans to develop new connections or nurture their existing relationships with other humans. Most participants hiked Kilimanjaro with colleagues, family, friends or their partners. Others joined groups of people who they had never met. Despite this, almost all participants mentioned their appreciation of the comradery gained and the bonds strengthened by hiking together. One participant who met their spouse on the mountain added: '*I married one of them... I met someone who I ended up spending the rest of my life with. So that's [a] pretty big sliding doors moment*' (interviewee 30). Some participants were still in touch with their tour guide and hiking team years later: '*And I also use it in the time that we fostered great relationships with the four guides that were with me. So it really became like a family, like a camaraderie, you know*' (interviewee 17).

Spiritual refers to the basis of nature for nurturing one's religion or inner spirit by connecting to self or a higher entity. Participants mentioned that their experience helped to '*fill their soul*' while others said they wanted to feel closer to loved ones who had passed away. One participant expressed the spirituality they felt on the mountain: '*...I think spiritually, too...there was a point that really struck me and how the grandeur of nature and just...that there's something bigger there than us, maybe that's creating these things. And so I think it's the physical aspect, but I think it's also the spiritual aspect...*' (interviewee 22). Another participant connected this NCP with religion: '*That's why religion compares mountains with power and inspiration. I feel a bit like this when I'm there. You feel high*' (interviewee 11).

3.6 | Maintenance of options

Maintenance of options is defined by IPBES as the capacity of nature to '*keep options open in order to support a good quality of life*' and is linked to the context-specific NCP of *Intergenerational benefits*. *Intergenerational benefits* refer to maintaining the existence of nature for future generations to experience. It should be noted that

the *Maintenance of options* in NCP can permeate across regulating, material and non-material NCP groups. However, in this case, it is classified as non-material in the context of tourists expressing desire for their children, grandchildren and future generations more widely to experience the same non-material NCP that they did during their hiking journey: 'I think my experience in terms of how it affects nature, I probably have a stronger drive to protect it for the people that come after me. Like being there probably makes me feel stronger about wanting to protect that for my grandchildren' (interviewee 10).

4 | DISCUSSION

The findings of this study demonstrate that tourists primarily express non-material NCP at Mount Kilimanjaro. Many studies have also found that non-material NCP or CES are prevalent among tourists, with the most studied NCP expressed by tourists being related to recreation, tourism and aesthetics (Gross et al., 2023). The expression of *Aesthetic experiences* by tourists aligns well with other studies that highlight the beauty of nature as a positive contribution to tourists' experiences in nature (Ebner et al., 2022; Gosal et al., 2018; Müller et al., 2019; Pearce et al., 2017; Ribeiro & Ribeiro, 2016; Rossi et al., 2020; Van Riper et al., 2012; Zoderer et al., 2016). Interestingly, 'tourism and recreation' was not expressed by tourists as an NCP. In this study, participants referred to 'tourism and recreation' as an activity that can result in a multitude of NCP rather than a contribution of nature itself. This aligns with the framework of Pramova et al. (2021), who argue that it is a combination of activities (such as hiking), settings and affective, cognitive and sensory experiences that result in perceived CES (or non-material NCP).

Learning and life-changing perspectives have been identified as benefits of nature in other tourism studies. For example, in Mount Aconcagua, Argentina, tourists widened their knowledge about plants and animal species (Rossi et al., 2020). In the Kimberley region of north-western Australia, nature-based tourism allowed tourists to obtain a 'different perspective of the world' (Pearce et al., 2017). *New and unique experiences* mentioned by tourists suggest that Mount Kilimanjaro is a unique biodiversity hotspot that cannot be substituted. In a study on CES across Finland, Israel, the Netherlands and Scotland, Teff-Seker et al. (2022) found that experiencing something 'new or different' to everyday life was highly expressed among participants. Although it is not as prominent in studies on NCP, this is referred to as a 'novel tourist experience' within tourism literature (Coudounaris & Sthapit, 2017). *Social cohesion and bonding* were another benefit identified in similar studies, demonstrating the comradery felt among tourists from sharing experiences together in nature (Ribeiro & Ribeiro, 2016; Rossi et al., 2020). *Therapeutic and restorative experiences* mirror results from a review on the restoration of visitors through nature-based tourism (Qiu et al., 2021). Nature's positive impact on mental health and well-being through fostering spaces for quietness, solitude and restoration has been well documented (Berto, 2014; Cocks et al., 2016; Harris, 2017; Park et al., 2010; Russell et al., 2013; Söderback et al., 2004; Van Riper et al., 2012).

In comparison, there is a dearth of studies on NCP expressed by tourists that have identified *Challenging experiences*; *Connectedness with nature*; *Intergenerational benefits*; *Sense of place* and *Spiritual* NCP categories. However, another study at Mount Kilimanjaro did find that the hike was a rewarding opportunity for breast cancer survivors to gain personal strength, feel personally challenged and experience personal control (Burke & Sabiston, 2010).

4.1 | Implications for future research, policy and practice

Understanding the ways in which people express non-material NCP is critical for nature valuation and biodiversity conservation in both policy and practice. Failure to incorporate data on non-material NCP, and thus failure to account for the full range of perspectives, leaves natural resource policy processes especially vulnerable to partisan influences (Adams & Morse, 2019). People often speak up and take action if they feel their perspectives on and relationship with nature are not properly reflected in policy and management. Thus, appreciating non-material NCP provides an opportunity for policymakers to engage with communities and relevant actors to develop effective and sustainable management options that benefit both people and nature (Mattijssen et al., 2020). These findings are particularly valuable for those responsible for managing nature-based tourism destinations such as Mount Kilimanjaro by providing a deeper understanding of the beneficial NCP for tourists. For example, development proposals such as the controversial cable car pose a serious threat to nature at Mount Kilimanjaro (IUCN, 2020), potentially compromising the mountain's aesthetic quality and uniqueness, which are two NCP categories frequently mentioned by tourists. *Challenging experiences* would become obsolete since there is no physical exertion associated with taking a cable car up a mountain. Allowing tourists to walk slowly through landscapes offers more time for reflection (Pearce et al., 2017) and thus more opportunity to experience *learning and life-changing perspectives*, *connectedness with nature* and other non-material NCP. Given the substantial contribution of nature-based tourism to the local and broader Tanzanian economy, damage to Mount Kilimanjaro's unique environment could have detrimental consequences for local livelihoods.

Pluralization should be fostered by including a diverse range of actors to ensure that all perspectives, knowledges and values are considered. However, like in the case of hiking Mount Kilimanjaro, this may prove difficult if the representative sample consists of people who are mostly from privileged backgrounds. Therefore, understanding the perspectives of other actors who live and work at Mount Kilimanjaro is required for building a more comprehensive understanding of NCP at Mount Kilimanjaro. In the broader field of NCP, participants from diverse backgrounds should be purposefully sought out, where possible, to not only encourage inclusivity but ultimately, improve the research results.

In research and valuation projects, qualitative and non-monetary methods can be powerful tools for uncovering non-material NCP.

Most previous studies on values (including values of NCP/ecosystem services) expressed by tourists have solely relied on monetary and quantitative methods (Gross et al., 2023), resulting in a narrow viewpoint of NCP experienced through nature-based tourism. In-depth socio-cultural approaches can harness a comprehensive understanding of the various ways in which nature can positively influence people's lives, beyond economic benefits. Open and creative methods such as photo-elicitation can further enhance this understanding by uncovering how humans connect with and relate to non-human natural entities (Bignante, 2010; Petersen & Martin, 2021). This is especially the case for people who feel more comfortable or can better express themselves with the assistance of visual content (Biggs et al., 2021; Clark-Ibáñez, 2004). In this study, participants mentioned that reviewing old photos was a positive experience because it gave them a chance to reminisce on their hiking journey and their most memorable moments in nature at Mount Kilimanjaro. Taking an inductive and context-specific approach to assessing NCP can enable pluralization by developing themes based on the interview data first rather than restricting them to pre-defined categories (Topp et al., 2021). We encourage researchers working with NCP to take an interwoven approach so that case studies can be better understood and compared universally while still honouring the uniqueness and diversity across different socio-ecological contexts (Hill et al., 2021).

5 | CONCLUDING REMARKS

Drawing upon the guiding principles of the IPBES conceptual framework, this research builds upon the important field of NCP. The findings present an in-depth contextual understanding of the multitude of non-material NCP expressed by tourists who have hiked up Mount Kilimanjaro. In contrast to previous studies on nature-based tourism, this research demonstrates that the beneficial contributions of nature cannot be solely measured using monetary and quantitative approaches. By taking an interwoven approach, we can produce results that can be compared on a universal scale while still respecting the context-specificity of nature at Mount Kilimanjaro. We encourage future research on NCP that takes a pluralistic approach by including a diverse range of actors and weaving together both the context-specific and generalizing perspectives on NCP. By eliciting further insights into the unique and diverse ways that nature contributes to people's lives, this paper promotes the visibility of multiple perspectives on NCP and their incorporation into biodiversity conservation and sustainable management strategies.

AUTHOR CONTRIBUTIONS

Jasmine Pearson and Milena Gross conceived the ideas, designed the methods, collected the data and participated in the intercoder agreement. Jasmine Pearson led the data analysis and writing of the manuscript. Johanna Hofmann transcribed the interviews. All authors contributed critically to the drafts and gave final approval for publication.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest to disclose.

DATA AVAILABILITY STATEMENT

Due to the qualitative nature of this study, we are not able to make the data available in a way that ensures anonymity. As stated in the explanation form and declaration of consent, data were archived in a secure location and destroyed after exceeding the legal retention period of 10 years.

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DATA SOURCES

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SUPPORTING INFORMATION

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

Supporting Information S1: Interview guide.

Supporting Information S2: Photo-elicitation template.

Supporting Information S3: Explanation form and declaration of consent.

Supporting Information S4: List of home countries of participants, divided into Global North and Global South according to the Finance Center for South-South Cooperation (FCSSC, 2015).

Supporting Information S5: IPBES definitions of generalizing NCP categories.

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