

Principles for including conservation messaging in wildlife-based tourism

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Abstract

1. There is growing evidence that wildlife-based tourism can be a valuable pathway to transform the environmental knowledge, attitudes and behaviours of tourists, if complemented by effective conservation messaging and proactive interpretive experiences.
2. Yet, such conservation messaging is not always a priority for many wildlife-based tourism operators, who often avoid exposing happy tourists to the daunting biodiversity crisis. In this paper, we argue that failing to encourage tourists to do more on behalf of wildlife represents a missed opportunity for conservation.
3. Based on a comprehensive review of the academic literature, we show that conservation messaging is virtually absent from many mainstream wildlife-based tourism operations, often failing to connect global audiences to conservation issues.
4. We found that the scholarly literature on the effectiveness of different techniques, approaches and contents of conservation messaging in wildlife-based tourism is meagre at best. Yet, alternative forms of communicating conservation-related messages are opening new avenues to broaden the conservation potential of wildlife-based tourism.
5. We suggest a set of principles for improving the implementation of conservation messaging in wildlife-based tourism operations in order to maximize their educational potential. We end by calling for further research efforts on the factors implicated in effective conservation messaging in wildlife-based tours in order to pave the way for a new era of conservation-oriented tourism.

KEYWORDS

biodiversity loss, conservation messaging, emotional engagement, environmental education, interpretive experience, nature connectedness

1 | INTRODUCTION

Wildlife-based tourism is one of the most rapidly growing markets on the planet (UNWTO, 2015; World Bank, 2018). Although reliable measures of its global economic impact are scant, there is

well-established evidence that wildlife-based tourism has become a leading foreign exchange earner in an increasing number of countries (Karanth & DeFries, 2011; Moorhouse, Dahlsjö, Baker, D'Cruze, & Macdonald, 2015; Reynolds & Braithwaite, 2001). For instance, it has been estimated that almost 600,000 tourists participate

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annually in shark-based tourism (Cisneros-Montemayor, Barnes-Mauthe, Al-Abdulrazzak, Navarro-Holm, & Sumaila, 2013), that bird-watching creates a total annual industry output of \$US 107 billion across the United States (Carver, 2013), that muck dive tourism (i.e. scuba diving focusing on finding rare and cryptic species) generates more than \$US 150 million in tourism income annually in Southeast Asia (De Brauwier et al., 2017), and that whale-watching employs more than 13,000 workers world-wide (O'Connor, Campbell, Cortez, & Knowles, 2009). Additionally, it has also been estimated that terrestrial protected areas receive roughly eight billion yearly visits, generating approximately US \$600 billion/year in direct in-country expenditure and US \$250 billion/year in consumer surplus (Balmford et al., 2015).

Not surprisingly, there is also evidence that this type of tourism can bring some costs for wildlife, inducing behavioural changes that can affect individual fitness, survival and reproductive success, cascading at population and community levels (Buckley, 2004; French, González-Suárez, Young, Durham, & Gerber, 2011; Shannon, Larson, Reed, Crooks, & Angeloni, 2017; Trave, Brunnschweiler, Sheaves, Diedrich, & Barnett, 2017). For example, habituation to non-threatening humans associated with tourism could reduce the antipredator response of animals towards predators and poachers, thus influencing the dynamics of populations (Geffroy, Samia, Bessa, & Blumstein, 2015). Broekhuis (2018) also evidenced lower cub recruitment for female cheetahs *Acinonyx jubatus* exposed to high tourist abundance. Along these lines, energy expenditure significantly increased in brown bears *Ursus arctos* that were experimentally exposed to tourism (Rode, Farley, Fortin, & Robbins, 2007), and artificial feeding associated with bear-watching facilities has been also suggested to disrupt the functional role of this top predator with ecosystem-level implications (Penteriani et al., 2017). Finally, cetacean watching activities can negatively impact whale and dolphin populations (Parsons, 2012) through the effects of frequent interruptions of foraging behaviour (Christiansen, Rasmussen, & Lusseau, 2013) and collisions between whale-watching vessels and cetaceans (Laist, Knowlton, Mead, Collet, & Podesta, 2001).

Despite these shortcomings, wildlife-based tourism often results in positive conservation outcomes (Buckley, Castley, Pegas, Mossaz, & Steven, 2012; Macdonald et al., 2017; Wilson & Tisdell, 2003). In many places, wildlife-based tourism contributes to funding and securing important wildlife habitats and community-based conservation areas that would have been potentially lost to development projects otherwise (Larm, Elmhagen, Granquist, Brundin, & Angerbjörn, 2018; Naidoo, Fisher, Manica, & Balmford, 2016). In Madagascar, tourism already generates net conservation gains for at least 13 lemur species (Buckley, 2014). In numerous cases, wildlife-based tourism helps reduce poaching levels by making threatened species more valuable alive than dead, contributing to the disincentivization of illegal wildlife trade (Leung, Spenceley, Hvenegaard, & Buckley, 2018; Naidoo et al., 2016; Naidoo, Weaver, De Longcamp, & Du Plessis, 2011). Furthermore, several experiences from all over the world demonstrate that wildlife-based tourism can also provide incentives for local communities to adopt sustainable wildlife management, when

benefits are equitably distributed (Bluwstein, 2017; He et al., 2008; Naidoo & Adamowicz, 2005; Osano et al., 2013).

Wildlife-based tourism has also been shown to be a valuable pathway for transforming the environmental knowledge, attitudes and behaviours of tourists through first-hand encounters with wildlife, complemented by effective conservation messaging¹ (Ballantyne & Packer, 2005, 2011; Ballantyne, Packer, & Hughes, 2009; Christie & Mason, 2003; Gray, 1993; Powell, Brownlee, Kellert, & Ham, 2012; Waylen, McGowan, & Milner-Gulland, 2009). However, such conservation messaging is not always a priority for many wildlife-based tourism operators (e.g. Banerjee, 2012; Lamb, 2019; Lück, 2015; Ponnampalam, 2011), who often fail to encourage powerful bonds between people and wildlife by means of well-designed conservation education and proactive environmental interpretations (e.g. Murphy, Campbell, & Drew, 2018; Newsome, Rodger, Pearce, & Chan, 2017; Pratt & Suntikul, 2016). Based on a comprehensive review of the literature, we argue that failing to encourage tourists to do more on behalf of wildlife represents a missed opportunity for conservation. In this article, we suggest a set of principles for improving the implementation of conservation messaging in wildlife-based tourism operations in order to maximize their conservation potential.

2 | CONSERVATION MESSAGING IN WILDLIFE-BASED TOURISM

The magnitude and scope of the biodiversity crisis call for innovative ways to connect global audiences to conservation challenges (e.g. Balmford, 2017; Novacek, 2008). There is a greater need than ever to devise powerful tools to effectively engage society in conservation issues, particularly in view of the growing evidence that urban populations are becoming increasingly disconnected from wildlife (Balmford, Clegg, Coulson, & Taylor, 2002; Kesebir & Kesebir, 2017; Legagneux et al., 2018; Soga & Gaston, 2018). In fact, recent research has shown that there is an overall social misconception of the conservation status of many charismatic endangered species (Courchamp et al., 2018; Naylor & Parsons, 2018). In this paper, we posit that wildlife-based tourism operators are key partners in educating and inspiring people to take informed conservation action (Apps, Dimmock, & Huveneers, 2018; Hughes, Packer, & Ballantyne, 2011; Powell & Ham, 2008).

As wildlife population trends continue to decrease at the global level (IPBES, 2019), the quality of conservation messaging, as an essential input to the tourist experience, remains paramount to garner support for wildlife conservation, primes long-term environmental learning and stimulates a conservation ethics (Beaumont, 2001; Borges de Lima & Green, 2017; Falk, Ballantyne, Packer, & Benckendorff, 2012). For instance, Veríssimo, Fraser, Groombridge, Bristol, and MacMillan (2009) showed that the conservation status of bird species in the Seychelles was an important factor determining if international tourists were willing to pay for specific flagship conservation projects. This highlights the still-untapped potential of effective conservation messaging during wildlife-watching tours

for simultaneously promoting environmental education, direct conservation funding (e.g. donations) and positive attitudes towards wildlife (Apps et al., 2018; Pennisi, Holland, & Stein, 2004; Walker & Moscardo, 2014). Such conservation messaging can also go a long way in promoting active citizenship and enhanced environmental stewardship, by articulating desirable trajectories towards sustainability and building agency for change (Rattan, Eagles, & Mair, 2012; Ryan, Kaplan, & Grese, 2001).

2.1 | Shortfalls and deficiencies in conservation messaging in the wildlife-based tourism sector

Environmental education has been argued to be virtually absent from several wildlife-based tourism experiences around the world. For instance, Banerjee (2012) has claimed that tiger viewing in India features a prominent focus on thrill seeking, with visitor education and conservation messaging being almost non-existent. An urgent need for improved nature interpretation services has also been highlighted in Sri Lanka's national parks with around 18% of negative reviews by visitors citing poor interpretation as a cause for their dissatisfaction (Prakash, Perera, Newsome, Kusuminda, & Walker, 2019). Similarly, information on cetacean conservation and threats to the marine environment is considered to be very limited in many whale-watching tours, generally not reaching tourist expectations (Lück, 2003, 2015; Pratt & Suntikul, 2016). Dolphin-watching tours in Oman have also been reported to lack on board environmental interpretation and education materials, showing null effect on conservation awareness among dolphin-watchers (Ponnampalam, 2011). Ziegler et al. (2018) mentioned that no interpretation was provided at a whale shark tourism site in the Philippines, beyond the 5-min pre-interpretation talk outlining the rules of the encounter with sharks. Also, poorly trained guides have been reported in the Kinabatangan Wildlife Sanctuary in Borneo (Newsome et al., 2017), and the Ayeyarwaddy dolphin tourism activities in Myanmar have been argued to occur in 'an information vacuum' (Walsh & Zin, 2019). There are also concerns about protected areas being 'sportified' through a notable increase of adventure racing events where no conservation messaging is delivered (Newsome, 2014; Newsome, Lacroix, & Pickering, 2011).

In addition, numerous case studies highlight that some of those wildlife tours that do provide environmental interpretation often tend to focus on species natural history, failing to give information on wildlife conservation status, environmental threats or opportunities for tourists to engaging in conservation action (e.g. Lamb, 2019; Margaryan & Wall-Reinius, 2017). To the best of our knowledge, there is no quantification of the extent to which conservation messaging is lacking from wildlife-based tours. However, the number of cases reported seems to suggest a systemic issue, probably more pervasive than previously thought. For example, research-informed recommendations to improve the conservation messaging in wildlife-based tourist venues are widespread, including in the case of bear viewing experiences in the Kodiak National Wildlife Refuge in

Alaska (Keating & Krannich, 2019), wildlife tours in Australia (Rodger, Moore, & Newsome, 2007), whale watching companies in Mexico (Malcolm, Chávez, & Cornejo, 2017) or manta-based tourism in Fiji (Murphy et al., 2018). Similarly, visitors to South African national parks often argue that rhino poaching is rarely mentioned in wildlife-based tours, which leads them to think that the situation is not under control (Lubbe, du Preez, Douglas, & Fairer-Wessels, 2019).

Despite these shortfalls and deficiencies in conservation messaging, there are also examples of wildlife tour operations providing tailored interpretive experiences specifically focusing on wildlife conservation (e.g. Burbach, Pennisi, West, & Ziegler-Chong, 2012; Hughes et al., 2011; Peake, Innes, & Dyer, 2009; Schänzel & McIntosh, 2000; Wardle, Buckley, Shakeela, & Castley, 2018), but also more broadly in the ecotourism sector (Moscardo, Woods, & Saltzer, 2004; Spenceley & Snyman, 2016). Indeed, different studies have shown that environmental education during mediated encounters with wildlife can contribute to pro-conservation attitudes among tourists, although most empirical evidence to date is essentially restricted to marine environments (Ballantyne et al., 2009; Zeppel, 2008; Zeppel & Muloin, 2008). This body of research has shown that information provisioning alone is often insufficient to build an individual's conservation ethic that would lead to pro-conservation behaviour (Krasny, 2020; Skubel, Shriver-Rice, & Maranto, 2019).

2.2 | The role of emotions in promoting pro-environmental attitudes and behaviours

There is well-established evidence that emotions play a fundamental role in human experience (Dolan, 2002; Shackman & Wager, 2019), underlying many other mental processes such as motivations (e.g. Frijda, 1986; Izard, 2009) and decision-making (e.g. LeDoux, 1996; Winkelman, Knutson, Paulus, & Trujillo, 2007). By virtue of having emotions, humans are able to ascribe values to wildlife (Jacobs, Vaske, Dubois, & Fehres, 2014; Jacobs, Vaske, & Roemer, 2012). In fact, numerous studies have shown that emotion-driven circuits substantially shape human behaviours in relation to wildlife (Fernández-Llamazares, Western, Galvin, McElwee, & Cabeza, 2020; Hudenko, 2012; Slagle, Bruskotter, & Wilson, 2012). As such, emotions are fundamental in understanding human-wildlife inter-relationships in many different contexts (Jacobs & Vaske, 2019; Manfredi, 2008), including the wildlife-based tourism sector (see Jacobs & Harms, 2014).

Several environmental psychology theories have pinpointed at the emotional engagement with wildlife as a plausible factor to favour the uptake of conservation messaging, given that emotionally driven stories are more likely to be retained in memory (Hall, James, & Wilson, 2010; Jacobson et al., 2019; Kidd et al., 2019; St John, Edwards-Jones, & Jones, 2010). Some authors have highlighted that people relate strongly to wildlife at an emotional level (Manfredi, 2008; Mayes, 2017) and that emotions can drive our motivation to view wildlife (Jacobs, 2009). The biophilia hypothesis, suggesting that humans possess an innate tendency to seek

emotional affiliations with nature, is also particularly relevant in this regard (Wilson, 1984). In line with this, the theory of emotional affinity (Kals et al., 1999) states that direct experiences in wildlife can promote emotional bonds and ties with wildlife, which in turn can lead to pro-conservation behaviours. Some works have started to underscore the potential of wildlife-based tourism in promoting relational values (i.e. emotional and cultural ties with nature) that support environmental stewardship (Britto dos Santos & Gould, 2018; Chan et al., 2016; Skubel et al., 2019). For example, connectedness with nature can be facilitated through the establishment of positive emotional connections with nature (Perrin, 2018; Rios & Menezes, 2017).

Combining the emotional response of viewing wildlife in situ with the educational benefits of a tailored interpretive programme provides tourism operators with numerous opportunities to cultivate the conservation potential of a tourism experience (Ardoin, Wheaton, Bowers, Hunt, & Durham, 2015; Borges de Lima & Green, 2017; García-Cegarra & Pacheco, 2017; Giannetta, 2018). At the same time, when emotional input is added to learning experiences, conservation-related information is more easily remembered (Jacobs & Harms, 2014; Jacobson, McDuff, & Monroe, 2015). Burbach et al. (2012) found that visitors who participated in interpretive programmes (e.g. guided tours or education activities) ended up having significantly higher levels of connectedness to nature than those that only participated in recreation activities. Some operators are also starting programmes to educate local communities, their own staff and tourism marketing agents (Black & King, 2002; Ormsby & Mannle, 2009; Wearing, Tarrant, Schweinsberg, & Lyons, 2017).

2.3 | Knowledge gaps and future research directions

Empirical evidence grounded in robust methodological design (e.g. before-and-after-control-impact, counterfactual scenarios, randomized evaluations, longitudinal surveys) is needed to determine the net effects of conservation messaging delivered educationally and/or through emotional experiences (Hughes, 2013; Jacobs & Harms, 2014; Karanth, DeFries, Srivathsa, & Sankaraman, 2012; Prévot, Clayton, & Mathevet, 2018). A similar point has also been made in relation to the educational programs of zoos and aquariums, whose effectiveness remains largely unassessed (Moss, Jensen, & Gusset, 2015). Stronza, Hunt, and Fitzgerald (2019) have developed a framework for conducting rigorous empirical assessments of the conservation impacts of ecotourism. Other authors have also called for further research on how conservation messaging could be best delivered to maximize its educational value (e.g. Ballantyne, Packer, & Falk, 2011; Ballantyne, Packer, Hughes, & Dierking, 2007; Moscardo et al., 2004). Differences between the Global North (i.e. generally poor conservation messaging in wildlife-based tours) and the Global South (i.e. large absence of environmental interpretation in wildlife-based tours) also deserve much more scholarly and policy attention than they have received up to date.

Additionally, research on the motivations of wildlife-based tour operators to incorporate conservation messaging in their activities

is also largely lacking. In fact, the assumption that all wildlife-based tour operators would eventually have a strong desire and/or willingness to engage in conservation messaging is unrealistic for several reasons. First, some venues might not necessarily have the capacity and/or resources to invest in environmental interpretation and/or conservation messaging (e.g. Ardoin & Heimlich, 2013). Second, incorporating an educational component into wildlife-based tourism often depends on the voluntary commitment of each operator, as incentives for doing so are often scarce (see Box 1). Third, some tourism operators might decide not to deliver conservation messages on their wildlife-based tourism packages to avoid confronting happy tourists with the harsh reality of biodiversity loss, or exposing them to overly complex, sensitive and/or controversial topics (Jacobson et al., 2019; Novacek, 2008; Ryan, Hughes, & Chirgwin, 2000). Similar concerns have been raised in the wildlife film industry, with filmmakers deliberately avoiding depressing or vilifying audiences in order to maximize the box-office appeal of their films (Richards, 2013; Watts, 2006; Wright, 2010). Along these lines, some authors have

BOX 1 Developing a regulatory framework to maximize the conservation potential of wildlife-based tourism

The full implementation of the principles in Figure 1 will require the development of appropriate incentive structures that reflect the inherent values of biodiversity for the wildlife-based tourism sector (Eshoo, Johnson, Duangdala, & Hansel, 2018). Direct subsidies, tax incentives or tax breaks, social incentives (e.g. capacity-building opportunities) and voluntary mechanisms such as accreditation (Higginbottom & Tribe, 2004) or eco-labelling (Treves & Jones, 2010), can encourage an educational turn in the wildlife-based tourism sector. For instance, the contribution of capital from the tourism sector could be expanded through tax deductions similar to those of conservation easements (Merenlender, Huntsinger, Guthey, & Fairfax, 2004). Similarly, the criteria for granting public subsidies to wildlife-based tourism operations could be re-defined to include educational indicators. In this vein, the Invest Tourism Initiative in Chile aims to attract investment for sustainable projects, which are required to have a rich environmental interpretation (see OECD, 2020). This would in turn require the establishment of a strong regulatory framework in order to create a conducive institutional setting in which these incentives could work in practice and their effectiveness be evaluated (Wardle et al., 2018). Finally, in the same way that there are accreditation systems to certify the environmental and ethical credentials of wildlife-based tour operations (e.g. Certified Wildlife Friendly seal), there should be positive incentives (e.g. awards) and practical guidelines for the uptake of best-practice standards in conservation messaging.

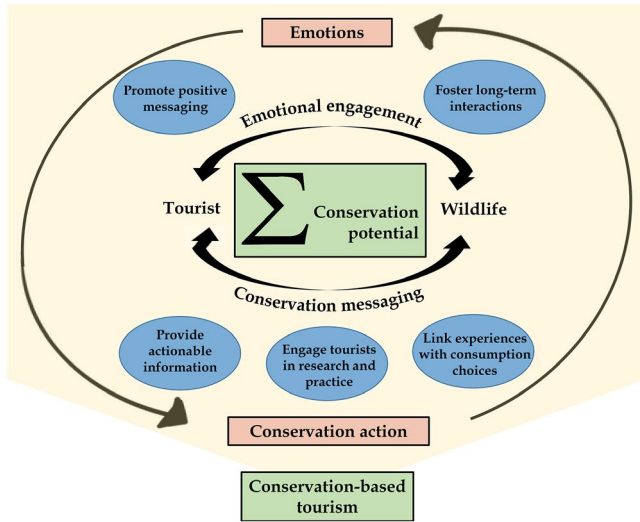


FIGURE 1 Diagram summarizing the five principles suggested for maximizing the conservation potential of wildlife-based tourism. Two suggestions focus on amplifying emotional engagement among tourists participating in wildlife-based tours (upper part). Three other principles aim to promote environmental education in order to empower tourists and engage them in conservation action (lower part). Researchers have pinpointed at the establishment of emotional bonds with wildlife as an important driver of pro-conservation behaviours (DiEnno & Thompson, 2013; Nisbet, Zelenski, & Murphy, 2008). In line with the emotional affinity theory (Kals et al., 1999), the combination of emotional engagement and knowledge-driven actions provided by wildlife-based tours will foster the transition towards conservation-oriented tourism

claimed that commercial rather than conservation interests have tended to dictate the style and content of the interpretive experiences provided by tourism operators (Ballantyne & Uzzell, 1999; Buckley & Mossaz, 2018), often packaged as a form of 'edutainment' of marginal educational value (e.g. Lamb, 2019; Milstein, 2016).

Although the topic of conservation messaging has received relatively scant research attention and the sociocultural and geographic patterns of how conservation is communicated in wildlife-based tours are still largely under-explored (e.g. differences according to wildlife taxa, tour prices or country wealth), it has been argued that exposing tourists to a crisis situation might often render them disenchanted or dissatisfied with both the destination and the whole tourism experience (Hosany & Gilbert, 2010; Prayag, Hosany, & Odeh, 2013). Yet, with alternative forms of communicating conservation-related messages becoming available (e.g. Jacobson et al., 2019; Novacek, 2008), most of which capitalize on emotion-driven circuits, these arguments are starting to lose support.

3 | EMBARKING ON A NEW CHAPTER OF CONSERVATION MESSAGING

Empirical research examining the effectiveness of different techniques, approaches and contents of conservation messaging in wildlife-based tourism is relatively scant. However, a consistent

finding in the literature is that interpretive experiences emphasizing that tourists can make a difference through their conservation actions generally translates into high levels of tourist satisfaction (Ham, 1992; Moscardo et al., 2004; Peake et al., 2009; Pierssene, 1999).

Below we suggest a set of principles for maximizing the conservation potential of the tourist experience (Figure 1), based on findings derived from the academic literature. We particularly draw on the extensive body of literature showing that virtually all aspects of cognition are affected by emotion (Jacobs, 2012), including perception (Dolan, 2002), motivation (Izard, 2009) and decision-making (Winkielman et al., 2007). As shown in the previous section, tourists are not always well equipped to transform the emotional bonds established with wildlife in a tourism experience into active citizenship, policy advocacy, public engagement and/or environmental stewardship. Here we propose that tourism-based operators can seize the opportunity provided by a deep emotional connection with wildlife to support such transformation, and that this can be best achieved by embracing at least some of the principles suggested. These principles should not be taken in an absolute sense, as we believe that on the basis of future theory and practice, some of them may be refined, and new ones may emerge. As such, Figure 1 should not be understood as a theoretical model in an orthodox sense, but rather as a conceptual scaffolding, with open space to accommodate new evidence, as it becomes readily available. We also discuss several incentive structures that can ensure a transition from wildlife-based towards conservation-oriented tourism (Box 1).

Promote positive messaging: It has been reported that people are generally willing to donate more money and time to conservation organizations associated with positively framed messages (Filep & Laing, 2019; Jacobson et al., 2019). This sits well within the growing academic literature flagging the importance of well-informed optimism in motivating societal change towards sustainability (Balmford, 2017; Balmford & Knowlton, 2017; Knowlton, 2018). The nascent field of 'hopeful tourism' also aligns with an increasing trend towards more positive, forward-looking framings (Pritchard, Morgan, & Ateljevic, 2011). Wildlife-based tourism could indeed fit within this growing movement, helping tourists to learn more about conservation successes on the ground and focusing on solution-based approaches to face the environmental challenges ahead (Force, Manuel-Navarrete, & Benessaiah, 2018). A positive approach to conservation messaging does by no means exclude or overlook the hard facts, but rather puts them in perspective to celebrate conservation's accomplishments and motivate people to take purposeful action (Balmford, 2017). For example, Schänzel and McIntosh (2000) describe a penguin-watching tourist attraction in New Zealand, where tourists are offered the opportunity to participate in a working conservation programme and get first-hand information on the actions needed to conserve penguins in their own habitat.

Provide actionable information: Tourists have been shown to be more open to conservation messaging that includes practical, actionable site-specific and behaviour-related information, rather

than general natural history or conservation trivia (Ballantyne et al., 2009; Kim & Coghlan, 2018). Actionable information can also increase self-efficacy (i.e. a belief that one can succeed in a specific situation or accomplish a task; St John et al., 2010), influencing a person's goals, aspirations and motivations (Bandura, 1977, 1993; Krasny, 2020). For instance, considering the impacts of whaling on the whale-watching industry (Kuo, Chen, & McAleer, 2012; Orams, 2001), tourism operators could take a stronger stand in encouraging tourists to avoid whale meat. Although whale population declines are being driven by a combination of several multi-faceted factors (e.g. pollution, entanglement in illegal fishing nets, collision with shipping boats, climate change), there is well-established evidence of a strong tourist demand for whale meat in countries such as Iceland and Norway (Bertulli, Leeney, Barreau, & Matassa, 2016; Higham & Lusseau, 2008). We argue that tourism operators are well positioned to discourage whale meat consumption by tourists through simple nudges and targeted demand-reduction campaigns, thereby avoiding 'slaughtering the goose of the golden eggs' (Higham & Lusseau, 2008).

Engage tourists in research and practice: New 'hands-on' experiential forms of wildlife-based tourism are rapidly emerging. Wildlife-based tourism offers a great opportunity to offer experiential and hands-on learning opportunities (Otto & Pensini, 2017), which have the potential to increase pro-environmental attitudes (Skubel et al., 2019). For instance, voluntourism, where tourists are invited to undertake conservation actions (e.g. patrolling beaches and monitoring sea turtle nesting activities), is gaining traction world-wide (Brightsmith, Stronza, & Holle, 2008; Campbell & Smith, 2006; Gray, Meeker, Ravensbergen, Kipp, & Faulkner, 2017), and there is a substantial body of research showing that long-term volunteering experiences are linked to strong advocacy for the environment (Rattan et al., 2012; Ryan et al., 2001; Wearing & McGehee, 2013). Similarly, some tourism experiences have been successfully designed to include citizen science or research components (Crabbe, 2012; Marshall, Kleine, & Dean, 2012; Pattengill-Semmens & Semmens, 2003). For example, several wildlife tourism companies in Southern Spain and the Açores (e.g. Foundation for Information and Research on Marine Mammals, Espaço Talassa) engage scientists and tourists in whale-watching tours, including multimedia briefings before each trip and conservation-focused debriefings on return to shore. Other wildlife interpretation initiatives include attractive technologies for remote viewing of wildlife, such as use of webcams or drones to broadcast images of wildlife behaviour from nesting or breeding sites (e.g. Chambers, 2007; Loomis, Richardson, Huber, Skibins, & Sharp, 2018; Skibins & Sharp, 2018). Several studies have found that involvement of lay-people in scientific projects helps to raise their feelings of responsibility towards the environment and foster positive conservation attitudes and behaviours (Ballard, Dixon, & Harris, 2017; Evans et al., 2005; Newman, Buesching, & Macdonald, 2003; Toomey & Domroese, 2013). As a case in point, many volunteers who participated in a monarch butterfly monitoring scheme decided to plant pollinator gardens in their backyards (McKinley et al., 2017).

However, it is important to point out that the motivations of volunteer tourists tend to be quite different from the ones of casual wildlife visitors (e.g. Campbell & Smith, 2006), and it is still unclear the extent to which the latter could benefit from such initiatives.

Link experiences with consumption choices: The importance of connecting travel experiences with the tourists' home environments or their own consumption patterns has been recurrently stressed in the literature (Ardoin et al., 2015; Ham, 1992; Moscardo et al., 2004). It has been found that presenting conservation issues in connection with intertwined political, social and economic factors elicits more engagement than presenting conservation issues in isolation (Giannetta, 2018). For example, crocodile and frog-viewing tours in Costa Rica could ideally point at pesticide use in industrial-scale banana plantations as a main driver of reptile and amphibian loss (e.g. Grant, Woudneh, & Ross, 2013; Henriques, Jeffers, Lacher, & Kendall, 1997), eventually leading visitors to rethink their choices as consumers back in their home countries. Similarly, jaguar tour operators in the Gran Chaco (Bolivia, Argentina and Paraguay) could arguably take a stronger role in raising awareness of the links between jaguar conservation, cattle ranching, soybean cultivation and meat consumption patterns in developed countries (e.g. Romero-Muñoz et al., 2018). Some conservation campaigns are increasingly raising awareness of the links between orangutan conservation and the use of everyday palm oil products (Giannetta, 2018; Pearson, Lowry, Dorrian, & Litchfield, 2014). Educational initiatives in this vein are also becoming a common practice in zoos and aquaria all over the world (e.g. Ballantyne et al., 2007; Perdue, Stoinski, & Maple, 2012; Skibins, Powell, & Hallo, 2013).

Foster long-term relations: Conservation messaging can be strategically crafted to promote engagement with wildlife beyond the actual tourism experience by leveraging relational values (e.g. connectedness with nature; see Britto dos Santos & Gould, 2018). For example, information can be provided on-site at the destination while encountering wildlife, but also early-on in the experience by agents selling wildlife-based tourism packages (e.g. Buckley & Mossaz, 2018; Lamb, 2019). Post-visit resources have also been recommended to allow tourists to follow-up on particular interests and conservation strategies, extending the conservation potential beyond the tourist experience (Ardoin et al., 2015; Hughes, 2011, 2013; Rattan et al., 2012). For example, Hughes et al. (2011) worked with visitors in a marine turtle park in Australia and found that post-visit resources (e.g. kits with fact sheets, activities, quizzes, weekly emails about conservation issues specific to the site) facilitated opportunities to engage in conservation action. Furthermore, some studies argue that people-wildlife connections after a tourism experience can be maintained through a social media community, linking conservation messaging to visitor's close, personal and emotional experiences with wildlife (Lamb, 2019; Wheaton et al., 2016). Virtual communities have been suggested to act as hubs for the co-construction of relational values, which could help to counteract decreasing contact with nature by an ever more urban global society (Calcagni, Amorim Maia, Connolly, & Langemeyer, 2019).

4 | CONCLUSION

Despite the clear lack of environmental education from a large number of wildlife-based tourism operators, innovative approaches in conservation messaging hold promise in promoting meaningful and enduring relations between people and wildlife. Improving the conservation messaging of wildlife-based experiences can be best served by approaches embracing the principles and guidelines outlined in Figure 1. In the context of general illiteracy on patterns of biodiversity loss, raising the educational value of wildlife-based tourism becomes all the more pertinent, if not urgent.

There is a pressing need for the conservation community to continue establishing strategic partnerships with tourism operations to identify new ways of communicating conservation issues in an informed and timely manner. Increasing our understanding of the factors that determine the effectiveness of conservation messaging in wildlife-based tours will be key in paving the way for a new era of conservation-oriented tourism. If wildlife-based tourism aspires to continue relying on wildlife in the years to come, a stronger conservation stance should be a critical factor for the sector's sustainability, fostering a much-needed transition from wildlife-based to conservation-oriented tourism.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTIONS

Á.F.-L., S.F. and J.T. conceived the idea presented in this paper. All authors contributed to the writing of the manuscript.

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ENDNOTE

¹ Within the education literature, several terms have been used to refer to the different social strategies that are often used to engage

stakeholders in wildlife conservation (e.g. information, communication, education and/or outreach; Ardoin & Heimlich, 2013; Bickford et al., 2012; Monroe et al., 2008). Some scholars report the differences between environmental education and conservation education, often claiming that the latter fulfils a specific niche within the larger field of environmental education, as an outreach strategy in the field of conservation practice (Bride, 2006; Sauv e, 2005). Similarly, in the wildlife-based tourism literature, different terms have been used (often interchangeably) to refer to the educational component of these activities, including 'environmental interpretation' (Powell et al., 2012), 'visitor education' (Banerjee, 2012) or 'conservation messaging' (Ardoin et al., 2015; Skibins et al., 2013; Wheaton et al., 2016). In this paper, we use 'conservation messaging' as a leading analytical concept, encompassing many of the central principles of conservation education that use advocacy to inspire specific pro-conservation attitudes and behaviours, as well as active citizenship. In particular, our use of the term includes an explicit goal to contribute to enhanced environmental stewardship by supporting practices and values that are conducive towards desirable biodiversity scenarios.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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