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**#BiteMe: Considering the potential influence of social media on in-water encounters
with marine wildlife**

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Abstract

Over the past three decades, interacting with wildlife as a tourism activity has grown significantly and has transformed from a relatively rare experience into a mainstream tourism product. Tourism opportunities to watch, photograph and otherwise interact with animals in their natural environment have grown to include a range of species and settings, including in the sea. Close encounters with marine wildlife are facilitated by a wide range of commercial operators, and many include and promote a strong adventure component. This paper provides a consideration of the issues of risk and the emerging role of the use of social media in marine wildlife tourism experiences. While the concept of ecotourism has been widely explored in wildlife tourism research, the inherited risk involved in these activities has received little attention. This is particularly the case regarding interactions with potentially dangerous wildlife in open-water environments. This aspect warrants exploration in the context of the growth of wildlife photography/videography and sharing via social media platforms, which frequently display close encounters with animals in dangerous scenarios for both people and wildlife involved.

Keywords: marine wildlife tourism, risk, selfies, social media, swim-with programmes

Introduction

Marine wildlife tourism is increasingly popular, and one of the fastest-growing areas of wildlife-focused tourism (Bruce & Bradford, 2012; Burgin & Hardiman, 2015). Encounter options range from passive viewing from land, sea or air to activities such as close pursuit, feeding, or entering the water to swim with animals in open ocean settings (Bulbeck, 2005; Ziegler et al., 2018). In-water interactions or swim-with programmes (SWPs) are a response to the increasing demand for up-close and personal wildlife experiences with charismatic megafauna (Samuels & Bejder, 2004; Shackley, 2001). Of particular note has been the growth of swimming/snorkelling with whales and dolphins, which has become a life-long ambition for many people (Curtin, 2006; Lück, 2009). Such activities are now offered in at least 14 countries targeting approximately 28 cetacean species (O'Connor, Campbell, Knowles, & Cortez, 2009; Samuels, Bejder, & Heinrich, 2000; United Nations Environment Programme/Convention on the Conservation of Migratory Species of Wild Animals [UNEP/CMS], 2017). Focal species for these programmes tend to be coastal delphinids (dolphins) due to their near-shore distribution; however, some baleen whales (most commonly humpback whales [*Megaptera novaeangliae*] and dwarf minke whales [*Balaenoptera acutorostrata sensu lato*]) are becoming more popular among marine wildlife enthusiasts (Orams, 2013; Samuels et al., 2000). SWPs are also providing experiences with other marine mammals such as pinnipeds and sirenians (Sorice, Schafer, & Ditton, 2006) as well as elasmobranchs such as shark and ray species (Gallagher et al., 2015). To a lesser extent, tours incorporating reptiles, such as marine turtles and crocodiles, can also be found within the spectrum of close interactions with marine wildlife (Murch, 2017; South Pacific Regional Environmental Programme, 2015).

It is apparent that apart from the mainstream activity to swim with dolphins, the marine wildlife tourism portfolio now covers a plethora of unique experiences with species lesser known to the public. Such tourist experiences are well covered on Web 2.0, furnished by

pertinent hashtags such as #BucketList, #MustDo or #DreamComeTrue that direct wildlife enthusiasts to profiles and feeds of interest, showing what is possible and fuelling the desire for the unusual and exotic. “Wildlife-selfies”, as one of the latest trends in social media, may form unrealistic expectations of wildlife encounters and simultaneously put humans and animals at risk, for example through defensive behaviour expressed by wildlife and inappropriate behaviour shown by tourists. The novelty of this form of wildlife consumption indicates that its management still is in its infancy; however, with an expected increase of people who seek new opportunities to encounter wildlife in its natural habitat, improved understanding via research is a high priority.

This paper critically discusses the state of the current literature related to the risk aspects of these operations. It considers the growing influence of the use of photography/videography in such encounters and the sharing of these via social media.

Methods

A literature review was undertaken to identify what is known regarding commercial in-water encounters with wild, free-ranging, marine megafauna. Our search employed a range of online search engines and databases focussing on the dimensions of marine wildlife tourism, as well as including the topic of social media in tourism research. Papers published in the scientific literature, books, book chapters, technical reports and published conference papers were identified by searches using combinations of keywords (e.g. wildlife tourism, social media, risk management, risk and safety, risk perceptions, swimming with dolphins/whales/seals, shark diving, provisioning, animal attacks). For the present literature review, 114 publications covering a period of 29 years from 1990 to 2019 were considered; however, it is acknowledged that this only constitutes a fragment of the existing body of academic literature and therefore

has its limitations. Figure 1 offers an overview of literature examined and the identified trends that are reflected in this paper.

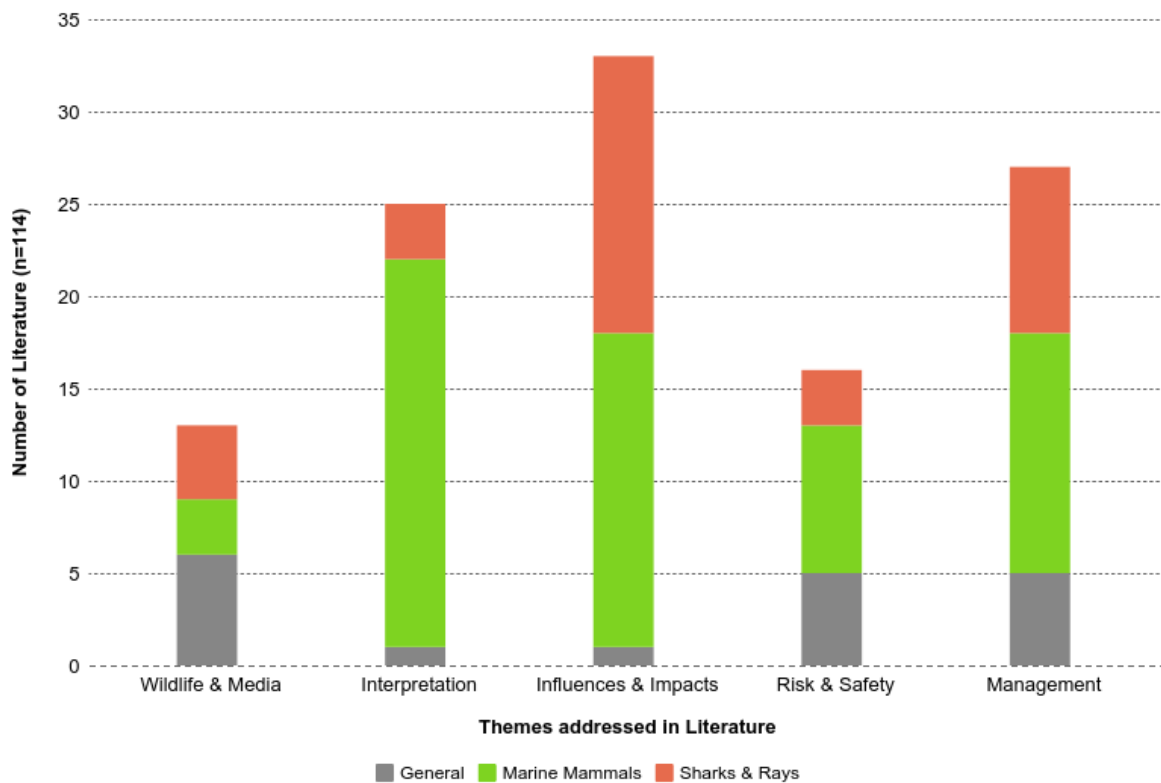


Figure 1: Literature addressing marine wildlife tourism categorised by themes and focus

Most publications on marine wildlife-focused tourism were found to concentrate on environmental interpretation as well as impacts on targeted species (notably on marine mammals, followed by sharks and rays) and their management (e.g. Apps, Dimmock, Lloyd, & Huveneers, 2017; Cowling, Kirkwood, Boren, & Scarpaci, 2014; Lück, 2016; O'Neill, Barnard, & Lee, 2004; Orsini, Shaugnessy, & Newsome, 2006; Timmel, Courbis, Sargeant-Green, & Markowitz, 2008). A detailed analysis is presented below under two main themes: first, a

consideration of the aspects of risks inherited by in-water tourism encounters with marine wildlife; and second, a review of the use of social media in wildlife encounters.

Swimming at your own risk: The concept of risk in marine wildlife tourism

Little attention has been devoted by authors to tourist risk and safety-related to wildlife tourism activities. Notable examples tend to focus on the risk of being bitten, stung, hit or charged by individuals or groups of animals during an interaction (e.g. Buckley, 2010; Newsome, Lewis, & Moncrieff, 2004; Newsome et al., 2005; Moscardo, Taverner, & Woods, 2006; Orams, Hill, & Baglioni, 1996; Spradlin, Barre, Lewandowski, & Nitta, 2001). More specifically, concerning in-water interactions with marine wildlife, the risk of tourists has only been addressed in a few studies. Examples include; on swim encounters with pinnipeds (*Otaria flavescens*; Dans, Crespo, & Coscarella, 2017), and when swimming with or food provisioning of delphinids and iniids (*Tursiops truncatus*; Orams et al., 1996; *Orcinus orca*; Pagel, Scheer, & Lück, 2017; *Inia geoffrensis* and *Globicephala macrorhynchus*; Scheer, Alves, Ritter, Azevedo, & Andriolo, 2014; N/S; Wiener, 2013). Interactions with predatory sharks and associated risks were emphasised, e.g. by Lobel (2008) and Gallagher et al. (2015), highlighting food provision and the manipulation of sharks (through touching and handling).

The United Nations Environment Programme Convention on Migratory Species (UNEP/CMS) briefly highlighted swimmer safety in their report on swimming with aquatic mammals (cetaceans, pinnipeds, and sirenians). In addition, the latest guidelines for responsible whale and dolphin watching, issued by the World Cetacean Alliance in 2018, and the online Handbook on Whale Watching, compiled by the International Whaling Commission and UNEP/CMS, mentioned a potential risk to snorkellers and swimmers when interacting with cetaceans. However, a comprehensive understanding of the issue is still lacking.

Tourists increasingly encounter risks by venturing into open ocean environments and simultaneously finding themselves face to face with marine apex predators (Jarvis, 2000; Orams, 1997). Hence, the risk of injury to both – human and animal – has been pointed out as a critical concern of in-water interactions (Allen, 2014) and is most prevalent in unguided, opportunistic encounters. Direct control, such as a guide being present, facilitates regulation of the activities to prevent the risk of injury of, as well as the harassment of wildlife emanating from tourists (Reynolds & Braithwaite, 2001), yet this form of regulation is found not being enforced comprehensively across the sector. Differences between guided and unguided swim approaches regarding disturbance of wildlife were emphasised by Boren, Gemmell and Barton (2009), finding New Zealand fur seals in established colonies responding with less avoidance and aggression during guided, commercial swims. Understanding animal behaviour is a critical factor concerning safety in an environment that is temporarily shared with marine predators. Seals display aggression by growling, barking, charging, pecking and slamming in the water (Piechota, Watson & Fuxa, 2015), and further may react differently depending on sex, age, and previous level of exposure to tourism activities (Cowling, Kirkwood, Boren & Scarpaci, 2014). Cetaceans use postures and gestures for communication with behaviour addressed towards humans being similar to those they use during (social) interactions with conspecifics (Pagel et al., 2017; Scheer, 2010). Aggression may be displayed, for example, by opening the mouth, fluke shake, head bobbing and aggressive head orientation, jaw clapping and charging (Mann, Connor, Tyack & Whitehead, 2000; Martinez & Klinghammer, 1978; Overstrom, 1983; Samuels & Gifford, 1997). Tourists interacting with sharks are at risk of being bitten or being stung when interacting with stingrays (Dobson, 2008; Newsome et al., 2004). Sharks show erratic movements, an S-shaped posture, spread fins and encircling as part of their behavioural makeup (Johnson & Nelson, 1973). Inappropriate human behaviours, such as approaches that are too close, approaches towards young/infant animals, touch or touching attempts, teasing

with objects or fish, splashing, chasing individuals, the use of noise and underwater propulsion vehicles, have all been reported to elicit aggressive/threatening behaviours in cetacean species (e.g. Goffman, Lavalli, Kerem & Spanier, 1999; Mann & Smuts, 1999; Scheer, 2010). In contrast, human perceptions of risk and safety within interactions with marine wildlife were seldom addressed in literature (Wiener, 2013). Therefore, the information provided by the tour operator on potential behaviour patterns encountered during such programmes and, in particular, how participants should ideally behave when entering the water (Pagel et al., 2017) plays an essential role for swimmer health and safety as well as animal welfare.

As noted by Moscardo and colleagues in 2006, there is currently no standard reporting system for human-wildlife conflicts in tourism contexts. Only the International Shark Attack File, maintained by the American Elasmobranch Society, provides information on frequency and type of shark-related incidents, mainly in a non-tourism context when human-wildlife encounters occur opportunistically, indicating that this area is still widely understudied. However, a visitor survey undertaken in the North Queensland region of Australia revealed a substantial number of tourists had experienced negative encounters when getting close to wildlife with at least 60 species involved (Moscardo et al., 2006). Despite this limited number of, nevertheless pivotal, findings, the topic of the risk of harm to marine wildlife tourists has not received further exploration. Furthermore, there is no published material exploring how participants in in-water interactions with wildlife perceive the risks involved in such activities. Given what is known about the acceptance of risk in adventure recreation, it is important to recognise that participants may not automatically perceive risk as something negative. It is possible that some aspects of risk add to the sense of adventure and excitement that tourists may value, or actively pursue in such activities (Zuckerman, 1979). Irrespective, what is clear is that there is a gap in the literature when it comes to the understanding of the role of risk and

tourist safety in the area of commercial activities that provide in-water encounters with marine wildlife.

Hashtag wildlife-selfie: Wildlife encounters and social media

The role and influence of social media is a topic that is growing in importance in tourism research. Despite a wide range of anecdotal evidence (mostly from social media postings), the context of wildlife-related tourism activities in relation to social media use has not been explored. Images (videos and photographs) of wildlife, with and without people, have flooded travel media, reflecting how the growth of interest in wildlife photography is influencing travel decision-making and expectations (Newsome & Rodger, 2013; Spradlin et al., 2001). More recently, the increasing availability of digital image capturing devices, especially via mobile phones and pocket-sized action cameras such as GoPros, and particularly the ability to share these images instantly via social media platforms on the internet, has added a new dimension to the influence of wildlife photography/videography (Kaplan & Haenlein, 2010).

The motivations and expectations of wildlife tourists are influenced by marketing and media representation of interaction with wildlife experiences (Newsome et al., 2005). This is further fuelled by the numerous television documentaries representing close-up and intimate encounters with wild animals, suggesting wildlife is always readily viewable and approachable. This is also influenced by the urban-based life of the vast majority of the developed world's population and the subsequent loss of connection with and understanding of the natural environment (Curtin, 2013; Miller, 2005). This separation from the realities of nature is correlated with an absence of caution towards wild animals caused by unrealistic media representations (Wiener, 2013; Wuersig & Wuersig, 2003). Here, perceived risk or danger, or the lack thereof, is based on the often anthropomorphised characteristics of an animal species,

such as being furry, cute and similar to humans (e.g. primates), or whether the animal is perceived as unhuman-like (e.g. reptiles; Ryan, 1998) (Newsome et al., 2005). Both types of perception, positive or negative, may encourage the desire to observe, feed, touch and photograph animals in their natural environment (Gallagher & Hammerschlag, 2011; Lück & Porter, 2018; Wiener, 2013).

Further, they may create unrealistic expectations and misunderstandings regarding the real risk of close encounters with particular species (Newsome, 2017; Newsome & Rodger, 2013). According to Orams (2002), this may be particularly inappropriate for species that pose a risk to tourist health and safety. For example, large sharks as a group of animals are commonly portrayed as dangerous and predatory to humans whereas dolphins are depicted as friendly and safe. The reality is that both groups of animals are apex predators that hunt and kill prey to survive, and both can pose dangers to humans (Newsome et al., 2004; Gallagher et al., 2015; Santos, 1997).

The desire to take photographs or videos of travel experiences is multi-faceted and can be a motivation to visit a particular destination, and a means to share experiences with others and/or a medium through which to recall and re-live memorable experiences (Newsome et al., 2005). The use of equipment to capture images may also have an association with a sense of safety, control and comfort in an unknown situation (Katcher & Wilkins, 1993; Sontag, 1977). The visual experience in wildlife tourism scenarios is paramount to most participants, yet some prefer to be not distracted by looking through a camera lens (Lemelin & Wiersma, 2007). It is commonplace for wildlife tourists to capture images on cameras (including mobile phone cameras, video cameras, digital cameras, action cameras and, increasingly, drone-based cameras). For example, Gallagher and Hammerschlag (2011) found that 85 percent of participants on shark-based tours recorded videos or took photographs during their trip,

highlighting that for many tourists photography is a vital component of the wildlife experience. With this, it also becomes essential to familiarise tourists interested in close interactions with wildlife and its documentation with the etiquette of content generation causing minimal impact (e.g. by meeting approach distances to resting seals, using telephoto lenses etc.), yet managing inappropriate use of mediators in wildlife-focused tourism is still in its infancy. This also includes a careful selection of content shared on social media platforms on the part of the tour operator for marketing and promotional purposes as these images may be unrealistic and have a direct influence on tourist expectation and further, tourist behaviour around wildlife (Hoyt & Parsons, 2014). Orams (1997) argues that if participants' expectations are unrealistic, they often try to create that experience which increases the likelihood of avoidance or aggressive behaviour in marine life.

Among wildlife-image capture, a growing trend is the wildlife-selfie (Goldberg, 2019). That is people seeking to take a picture of themselves with the targeted wildlife. This trend is no doubt being influenced by the growth of user-generated content shared via the internet through social media outlets such as Facebook, YouTube, Weibo, Snapchat and Instagram. These practices and the proximity to wildlife they require have created a motivation to reduce the distance between people and wildlife and to create situations whereby the tourist and the wildlife can be featured in images or video together in attention attracting ways (Pearce & Moscardo, 2015). This behaviour on the part of the tourist tends to have several effects. It reduces the distance between the human(s) and the animal(s), thus increasing the possibility of physical contact and is more likely to evoke a response from the animal(s) as reduced distance can be perceived as a threat, eliciting 'fight/flight' responses. Typically, the person being photographed has turned their back to the wildlife and is distracted by camera handling and positioning and is therefore at higher risk of being injured by the animal(s) or of slips, trips, and

falls. Further, if a guiding staff member is distracted by selfie-taking, the guide is jeopardising the safety and supervision of tour participants he or she was entrusted with. It should also be noted that such attempts to capture images tend to portray animals as passive, powerless objects that exist for the entertainment of people, further commodifying the tourism experience (Dinhopl & Gretzel, 2016; Sontag, 1977).

Selfie-related fatalities have been documented, e.g. by Jain and Mavani (2017), with falling and drowning constituting the most incidents. However, the study did report instances of attacks initiated by wildlife (an incident during the Pamplona Bull Run in Spain; and at an aquarium, where a walrus dragged two people underwater). In one of the few papers on selfie-taking in natural area tourism, Pearce and Moscardo (2015) argued that selfie-taking and wildlife harassment are closely correlated. They contend that animals are more frequently exposed to stress, suffering severe injuries or even death due to selfie-taking behaviour applied by visitors. The increasing displays by various media of images or videos of people acting inappropriately around wildlife shared via social media and going 'viral' is adding to the glorification of such actions and reinforcing the attention-seeking drivers of some of this selfie-taking behaviour. The negative effects on the targeted wildlife include physical injury or death, separation of offspring from mothers, harassment, disturbance to natural behaviour, impacts on energy budgets as well as the physical restraining or manipulation of wildlife for photo opportunities – all indications of the strong consumptive, exploitive nature of the wildlife-selfie trend (Pearce & Moscardo, 2015). In addition, the online posting of such images can foster the encouragement of risk-taking behaviour (Lemelin, 2006; Pearce & Moscardo, 2015) to create dramatic or outrageous imagery that generates 'hits' and attention. Jain and Mavani (2017), argue that the production of a unique or attention-grabbing self-portrait is leading people to seek even more extreme experiences. Pearce and Moscardo (2015) point out that the frequency

of selfie-taking is likely to increase, causing negative consequences for the tourists, host communities, tourism attractions, and wildlife involved.

Conclusions

While wildlife tourism and ecotourism have already been examined by natural and social scientists, an investigation into the risk component, particularly in the marine environment, is lacking. Over the four past decades, findings in wildlife tourism research have contributed to an improved understanding of the negative impacts on animal species targeted by commercial tourism operations. However, the potential effects of this type of tourism on tourist health and safety are still not fully understood. While research on adventure leisure and recreation has contributed to increased knowledge about tourists' perceptions of risk, there is an extensive gap when it comes to studies dealing with wildlife-based activities in the marine environment (Buckley, 2010). In this regard, there is a particular dearth of research on in-water interactions between tourists and marine wildlife. The growth of marine in-water wildlife tourism experiences means that tourists increasingly encounter risks by both entering open-ocean environments and then by coming face to face with highly mobile, large, predatory animals. Furthermore, the trend towards providing unique opportunities to interact with potentially dangerous marine fauna raises the risk of injury or fatality.

Valuable insights into human-wildlife interactions can be gained by an exploration of the interplay between media and wildlife perceptions and how they affect decision-making processes, expectations and the tourist experience during in-water interactions. Previous work (e.g. Curtin, 2010) revealed that sharing the experience with friends and relatives is highly essential for tourist satisfaction. However, it is not known if this is also the case for sharing via user-generated content (such as photos and videos) on social media platforms and whether these

act as a driver for getting closer to particular animal species. The role of social media as perpetrator or preventor of risk-taking behaviour in wildlife tourists is yet to be explored. As highlighted by Moscardo et al. (2006), there is a need for research to explore the range of wildlife risk perceptions and the motivations for seeking contact with potentially dangerous species. Especially in need of investigation is the increasing role of sharing via social media in shaping the behaviour of tourists in marine wildlife tourism scenarios.

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