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Published in:
Tourism Recreation Research

Publication date:
2022

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The final published version is available direct from the publisher website at:
[10.1080/02508281.2022.2137651](https://doi.org/10.1080/02508281.2022.2137651)

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Citation for published version (APA):
Doodson, P., Melfi, V., Webber, A., & Dumbell, L. (2022). Animal-visitor interactions in semi-contrived tourism settings: A study of 'Meet & Greets' in UK zoos. *Tourism Recreation Research*. Advance online publication. <https://doi.org/10.1080/02508281.2022.2137651>

Animal-visitor interactions in semi-contrived tourism settings: A study of ‘Meet & Greets’ in UK zoos

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Word count: 8,867

Abstract

Animal-visitor interactions are common in captive-wildlife tourism settings, but there is a lack of research exploring what is on offer. This study defines and examines ‘Meet & Greet’ animal experiences in UK zoos within the context of the wider wildlife tourism industry, considering the differences between semi-contrived and fully-contrived interactions. From analysing the websites of members of the British and Irish Association of Zoos and Aquariums, the results show that Meet & Greets are frequently offered by zoos in the UK, but that these zoos do not always explicitly describe what the interaction involves. We propose that there is a need for more research on Meet & Greets, particularly looking at how zoos advertise these experiences and how they are perceived by potential participants, as there is a danger that accredited zoos could inadvertently be promoting the exploitation of animals for photo prop opportunities in other tourist settings.

Keywords: zoos; captive-wildlife tourism; animal-visitor interactions; animal photo props; Meet & Greets

Introduction

Opportunities to interact with non-human animals have become a commodity sold by tourist attractions worldwide. Millions of tourists want to touch, feed and be photographed with wildlife (non-domesticated species of animals) and are willing to pay for these opportunities (Moorhouse et al., 2017; Reynolds & Braithwaite, 2001). Many of these commodified interactions take place in captive-wildlife tourism settings; which involve ‘viewing animals in human-made confinement; principally zoos, wildlife parks, animal sanctuaries and aquaria, but also includes circuses and shows by mobile wildlife exhibitors’ (Moorhouse et al., 2015,

p.2). Captive-wildlife tourism allows large numbers of tourists to get up-close to wildlife without increasing human impact on natural habitats and is more affordable than expensive wildlife-watching holidays (Hughes et al., 2005; Packer & Ballantyne, 2012).

It is common for captive-wildlife tourism settings to offer Animal-Visitor Interactions (AVIs); ‘categories of activities that provide visitors (i.e., untrained non-staff members of the public) with the opportunity to have indirect and direct contact with live captive wild animals (both inside and outside of their permanent enclosures)’ (D’Cruze et al., 2019, p.2). However, captive-wildlife tourism settings, and the AVIs they offer, vary greatly in terms of animal welfare standards, educational value and conservation priorities (Cohen, 2012; Safina, 2018).

This paper identifies limitations in the current research into AVIs offered by captive-wildlife tourist attractions, and highlights where we believe future priorities should lie. Firstly, in the theoretical background we take an animal welfarist approach to zoos, suggesting that while good zoos may exist, research is needed to scrutinise the AVIs they offer and the impact they have on the animals and people involved. We introduce a zoo ‘Meet & Greet’ (M&G) as a type of AVI that allows visitors to ‘meet’ an animal, but suggest that M&Gs could be considered similar to exploitative animal photo prop opportunities in other captive-wildlife tourist settings. In the second section of the paper we present a quantitative website analysis to describe M&Gs on offer in UK zoos, which we believe is a necessary starting point for further research in this area. Finally, we include a discussion on possible directions for future research based on the findings from the website analysis and suggest that research into public perceptions of M&Gs is necessary to be able to explore whether these can be considered ethical interactions.

Theoretical Background

Captive-wildlife tourism settings

We will consider captive-wildlife tourism settings according to the framework proposed by Cohen (2009) as either semi-contrived or fully-contrived, defined in Table 1.

Setting	Description	Examples
<i>Semi-contrived</i>	Captive wildlife kept in contrived surroundings, sometimes simulating their natural habitats	Zoos, aquariums, animal theme parks
<i>Fully-contrived</i>	Captive animals are tamed, trained or humanised to varying degrees	Animal performances and shows

Table 1: Cohen’s (2009) framework for captive-animal tourism settings

In extreme cases captive wildlife in fully-contrived settings may have been removed from the wild, separated from their mothers at a young age, declawed, defanged, sedated or beaten into submission to become suitable ‘photo props’ for tourists (Belicia & Islam, 2018; Molloy, 2011; von Essen et al., 2020). This animal photo prop industry not only threatens the welfare of the animals involved but could increase demand for the exotic pet trade and undermine conservation efforts (Belicia & Islam, 2018; Lenzi et al., 2020; Macdonald & Wester, 2020). There is also a risk of lowering expectations of animal welfare standards and increasing demand for other ethically-questionable AVIs in fully-contrived settings (Moorhouse et al., 2015; van der Meer et al., 2019), or encouraging non-captive wildlife selfies, which have been shown to endanger tourist safety and cause harassment to wildlife (Pagel & Lück, 2022; Pearce & Moscardo, 2015).

While there may be some overlap between fully-contrived and semi-contrived captive-wildlife tourist attractions, the major difference according to Cohen (2012) is that animals in semi-contrived settings are not made to behave in ‘unnatural’ ways, and should not be induced or coerced into behaviours for the entertainment of the visiting public. However, this distinction is open to interpretation. There are examples of tourist attractions that can certainly be considered fully-contrived, such as animal circus performances, but what counts as semi-contrived is more ambiguous. We suggest that rather than a division between semi-contrived and fully-contrived tourism, captive-wildlife attractions can be thought of on a scale from semi-contrived to fully-contrived, where the best semi-contrived attractions have the least negative impact on their animals.

Zoos are a particularly popular form of semi-contrived captive-wildlife tourist attraction, with over 700 million annual visitors worldwide (Gusset & Dick, 2011). Some scholars argue that animal captivity can never be morally acceptable (Christou & Nikiforou, 2021; Fennell, 2013a), and while some zoos do undoubtedly cause animal suffering, we take the stance that zoos are heterogenous; that both good and bad zoos exist (Belicia & Islam, 2018; Safina, 2018). We will continue under the assumption that good zoos have the potential to maintain high animal welfare standards and contribute to species conservation, public education and scientific research (Anderson et al., 2008; Barongi et al., 2015; Gusset & Dick, 2011; Welden et al., 2020). However good zoos are not perfect, and we advocate research to scrutinise those zoos that have genuine aims to contribute to conservation, to continue to improve their standards and ensure they positively impact both animals and people.

AVIs in semi-contrived settings

AVIs in zoos are extremely common; a recent study found that 75% of zoos belonging to the World Association of Zoos and Aquariums (WAZA) offer AVIs (D’Cruze et al, 2019). Some literature indicates that AVIs in zoos may allow tourists to interact with animals, and have coveted photo opportunities, without necessarily having a negative impact on the animals involved (Ferguson & Litchfield, 2018). However, while good zoos may be considered semi-contrived tourism settings, the AVIs they offer may cross over into the realm of fully-contrived experiences. Any form of AVI where the primary purpose is human entertainment is ethically-questionable and the World Animal Protection guidelines recommend tourists should avoid taking photos with any captive wild animals (Fennell, 2013b; Kline & Fischer, 2021; World Animal Protection, 2017). Further research is needed to explore whether AVIs in semi-contrived captive-wildlife settings can be considered ethical.

We have adapted Fennel’s (2013a) first principle for the ethical use of animals for ecotourism to propose what we believe could be used as a starting point for the acceptable use of animals for AVIs. That is:

Acceptable forms of AVIs in semi-contrived tourism settings should place the interests of animals over the interests of humans, where animals should have the liberty to engage or terminate interactions independent of human influence.

(Adapted from Fennell, 2013a)

We suggest that as a minimum, animals involved in semi-contrived AVIs should not be forced or coerced into participation, should not be made to behave in unnatural ways for human entertainment, and the AVI should not cause any form of animal suffering.

Unacceptable AVIs may be considered fully-contrived experiences, and we suggest that any good zoo should not be offering such interactions.

The WAZA Guidelines for AVIs specifically state that zoos should ‘provide animals with choice of whether to participate or not in the interactions’ (WAZA, 2020, p.2). However, there is limited research into what AVIs zoos actually offer, and individual zoos may not be adhering to the guidelines (Learmonth, 2020). Providing animals with the choice to participate in an AVI is important to reduce the likelihood of negative welfare impacts (Saiyed et al., 2019), but a more thorough assessment is needed to explore whether AVIs can be ethical. De Mori et al. (2019) propose a protocol for the ethical assessment of AVIs, which they suggest should be used by zoos to evaluate and improve their interaction opportunities. While this is certainly a useful tool, relying on zoos’ self-assessment is not enough, and there is a need for objective research into AVIs offered by zoos.

Commodified AVIs in zoos

While animals in zoos may already be considered as commodities (Wearing & Jobberns, 2011), many zoos go a step further by offering AVIs at an additional cost to the zoo entrance fee. The existence of additional-cost AVIs is problematic as it could encourage an anthropocentric worldview that animals exist to serve humans; that zoo animals exist purely for entertainment and to provide interactions with visitors, with an economic value based on the animal’s desirability and the type of interaction available (Belicia & Islam, 2018). Because of this, additional-cost AVIs in zoos are comparable with AVIs in fully-contrived setting such as animal photo prop opportunities, even though animal welfare standards may be very different. Studies have shown that tourists are not good judges of animal welfare standards and may not be aware of the negative impacts of the animal photo prop trade (Moorhouse et al., 2015; Rizzolo, 2021b; Spooner & Stride, 2021). This makes it difficult for good zoos offering additional-cost AVIs to differentiate themselves from captive-wildlife

settings offering exploitative fully-contrived AVI opportunities (Rizzolo, 2021a). Good zoos should steer away from guaranteed interactions with animals in order to decommodify wildlife tourism (Belicia & Islam, 2018).

We do not think that additional-cost AVIs are inherently bad, but we do believe that there is a need for research to distinguish between AVIs included in the price of a zoo visit and additional-cost AVIs; where the interaction itself has been commodified, as this is likely to affect participant expectations and their experience. This is something that is missing from the current literature; D’Cruze et al. (2019) discuss visitor expectations for animal contact in zoo AVIs by categorising AVIs as ‘direct’ or ‘indirect’, however they do not consider whether the participant has paid extra for a specific interaction.

Meet & Greets

We propose that there is a type of additional-cost zoo AVI that has not been explicitly described by previous literature, which we will refer to as a ‘Meet & Greet’ (M&G). Zoos may refer to M&Gs as ‘animal experiences’ or ‘encounters’, but due to the ambiguous nature of these terms we are using M&G for specificity. While M&Gs may involve a feed or behind-the-scenes access, we believe that the focus of M&Gs is on the opportunity to ‘meet’, ‘encounter’ or ‘experience’ the animal, and that these differ from ‘keeper for the day’ experiences, where the focus is for the participant to adopt the role of a zookeeper to carry out husbandry tasks (Martin & Melfi, 2016).

The only existing large-scale study of AVIs offered by zoos globally categorises AVIs into eight different types; ‘feeding’, ‘petting’, ‘riding’, ‘walk or swim with’, ‘non-hand feeding’, ‘walk or swim through’, ‘drive through or cage dive’ and ‘show and performance’ (D’Cruze et al., 2019). However, we argue that these categories may not necessarily align with how

zoos advertise AVIs or how they may be perceived by potential participants and believe that the concept of a M&G could be more useful for future zoo AVI research. No other research has attempted to categorise AVIs and other studies use inconsistent terms that we believe are synonymous with M&Gs such as ‘feeding experiences’ (Jones et al., 2016), ‘feeding interactions’ (de Mori et al., 2019), ‘behind-the-scenes encounters’ (Acaralp-Rehnberg et al., 2020), ‘behind-the-scenes tours’ (Szokalski et al., 2013), or simply ‘encounters’ (Saiyed et al., 2019). There is currently no existing definition for M&Gs and there is no empirical data about how common M&Gs are or what they involve, so there is a need to first explore what is on offer to facilitate further research.

This initial study aims to describe M&Gs offered by UK zoos that are members of the British and Irish Association of Zoos and Aquariums (BIAZA). We have quantitatively analysed zoo websites to explore what M&Gs are advertised and what they include.

The study objectives are to:

1. Quantify how common M&Gs are in BIAZA zoos;
2. Descriptively analyse which species M&Gs are offered with;
3. Establish the costs, duration and participant restrictions (including age and maximum number of participants);
4. Categorise the type of interactions offered (including feeding or physical contact);
5. Use the information gathered to produce a definition of M&Gs offered by BIAZA member zoos;
6. Identify priorities for future research into M&Gs.

Methods

There were 123 BIAZA member zoos listed on the BIAZA website (BIAZA, 2021a) as of 09 July 2021; all were included in the study. Zoo websites were scanned for additional-cost AVIs by looking for an ‘animal experiences’ or ‘encounters’ page. Website homepages and subsections were searched, including FAQs and online shop or ‘buy tickets’ pages. If no references to additional-cost AVIs were found, then ‘none’ was recorded for that zoo.

Once an additional-cost AVI had been found, details were checked to determine whether each experience met the M&G criteria:

M&Gs offer participants the opportunity to meet specific animal species; under staff supervision; they take place inside the animal’s enclosure or a behind-the-scenes area; may involve physical contact, feeding or increased proximity to the animal; with or without a physical barrier present; and last for under two hours. M&Gs are available to members of the public at an additional cost to the zoo entrance fee and are advertised on zoo websites.

Due to COVID-19, not all zoos were offering M&Gs at the time of data collection. This was either due to (1) social distancing requirements prohibiting certain M&Gs from taking place, or (2) a freeze on bookings to allow the zoo to catch up on a backlog caused by COVID-19 related closures. M&Gs have been included in the study if the details were provided on zoo websites regardless of whether they were currently available to book.

Data recorded

For each M&G meeting the study’s criteria, variables recorded included: (1) date of data collection; (2) webpage URL; (3) name of zoo; (4) website page headings; (5) title of M&G; (6) animal species; (7) price; (8) duration; (9) participant restrictions; and (10) M&G

description. Any information that could not be found on the zoo's website was recorded as 'unspecified'.

The M&G animal species were recorded based on the title and description from the zoo webpage, and so were not taxonomically consistent. The 'general' species or family was noted (e.g. 'penguin') as well as a specific species or subspecies (e.g. 'African penguin') if given. The general taxa were also recorded ('multiple' if included more than one taxon or 'unspecified' if species not known). M&Gs were recorded as 'single' or 'multiple' species, based on the generalised species (i.e. a penguin M&G with multiple penguin species was recorded as a single species M&G).

Participant restrictions to M&Gs included the maximum number of participants and minimum age requirement. It was also noted whether M&Gs had to be pre-booked in advance or could be booked on the day.

Descriptions of M&Gs were categorised, including whether the M&G involved feeding the animals, and whether physical contact between the animal and participant was allowed.

Unlike D'Cruze et al.'s (2019) method of categorising physical contact as 'direct' or 'indirect', we recorded three levels of animal contact: 0 – no physical contact allowed; 1 – low physical contact such as hand feeding (contact instigated by the animal); 2 – high level of physical contact such as stroking or petting (contact instigated by the participant). We also recorded whether images showed physical contact between the animal and participant.

Results and discussion

How common are M&Gs in BIAZA zoos?

Details of at least one M&G on offer were provided by 74 (60%) of the 123 BIAZA zoos included in the study, even if not available to book at the time of data collection. A further seven zoos specified that M&Gs were not currently available due to COVID-19, suggesting that the actual number of BIAZA zoos offering M&Gs would be at least 81 (66%).

We found 13 zoos offered additional-cost AVIs that didn't fit the criteria of M&Gs (such as 'Keeper for the Day' opportunities) and 29 (24%) appeared to offer no additional-cost AVIs at all. While these results are not directly comparable with D'Cruze et al. (2019) due to different inclusion criteria (we looked at additional-cost AVIs only) the overall figure is consistent with their result that 75% of zoos globally offer AVIs; reinforcing the finding that AVIs are offered by a majority of zoos and that there is a need for further study into what is offered.

374 M&Gs were recorded in total, with zoos offering between one and 13 different M&Gs. The mean number of M&Gs per zoo was 5 and the median 4.5.

M&Gs are heavily promoted by BIAZA zoos; we found over half of the 74 zoos offering M&Gs (51%, n=38) had a specific 'Experiences' menu heading (including the word 'experience', 'encounter' or the title of a M&G) directly from the zoo website homepage.

What species are M&Gs offered with?

We found 82% of M&Gs were offered with a single species (n=308), and the most common taxa were mammals (n=279; 75%), followed by birds (n=48; 13%), and reptiles (n=20; 5%) (Table 2). There were three M&Gs recorded that did not specify the species or taxa involved, and 12 that involved multiple species from different taxa (Table 3).

Taxa	Multiple species	Single species	Total
Mammal	30	249	279
Bird	12	36	48
Reptile	5	15	20
Multiple	12	0	12
Fish	0	7	7
Invertebrate	3	1	4
Unspecified	3	0	3
Amphibian	1	0	1
Total	66	308	374

Table 2: Number of single vs. multiple species M&Gs by taxa

Multiple taxa species breakdown	Count
Birds of prey and meerkats	1
Bugs (creepy crawlies, rodents, reptiles, roaches)	1
Exotics (could include snakes, lizards, African spurred tortoise, turtles or invertebrates)	1
Meerkat, ferret and owl	1
Multiple (at least two of the following species: Brazilian tapir, binturong, red kangaroo, giant tortoises or Hartmann's mountain zebra)	1
Predator (Siberian lynx, bird of prey, Hudson-Bay wolves, Tiger, Humboldt penguins)	1
Reptile and amphibian	1

Reptile and bug	3
Tortoise and turaco	1
Unspecified (could include a small mammal, reptiles and invertebrates)	1
Total	12

Table 3: Species involved in multiple taxa M&Gs (descriptions in brackets as stated on zoo websites)

In general M&Gs are offered with specific animal species, making M&Gs comparable with non-zoo wildlife tourist experiences, which usually involve a specified single species for tourists to interact with (Moorhouse et al., 2015). The full list of M&G species can be found in Appendix A.

The strong bias towards M&Gs being offered with mammal species was also found by D’Cruze et al. (2019); though our results suggest a stronger bias towards mammal species in UK M&Gs than for AVIs offered by zoos globally. This mammal bias is unsurprising, as research has consistently shown the public’s preference for mammals in zoos and other wildlife tourist experiences (Moss & Esson, 2010; Newsome et al., 2005).

The top ten most common M&G species are shown in Table 4; representing 182 (49%) of all M&Gs offered by BIAZA zoos. Eight of the top ten most common species were mammals (meerkat, lemur, giraffe, lion, tiger, red panda, rhino, tapir) and two were birds (penguin and birds of prey). The most common species was meerkats, with 38 (10%) of all M&Gs; offered by 37 (30%) of all BIAZA zoos (one zoo offered two different meerkat M&Gs; one involving feeding from outside the enclosure and one involving entering the enclosure). It should be noted that there were at least eight more M&Gs involving meerkats as part of a multiple species M&G.

Species	Count	Mean price per person
Meerkat	38	£50.80
Lemur	27	£51.72
Penguin	26	£66.57
Giraffe	22	£79.01
Lion	14	£103.86
Tiger	14	£106.39
Red panda	11	£78.52
Rhino	10	£87.82
Birds of prey*	10	£51.79
Tapir	10	£47.06

Table 4: Top ten most common M&G species and mean price per person (n=182)

*'Birds of prey' does not include owl or hawk M&Gs. These are multiple species experiences or advertised as generic 'bird of prey' M&Gs.

Many of the top ten most common M&G species have been described as 'charismatic' or 'popular' by previous research; giraffes, lions and tigers were included in Courchamp et al.'s (2018) 'ten most charismatic animals' (attracting the most interest or empathy from the public), and public interest in meerkats and lemurs has been described by Candea (2010) and Clarke et al. (2019) respectively. Animal charisma or attractiveness can increase conservation support (Colléony et al., 2017; Gunnthorsdottir, 2001) so it is likely that this will also influence public preferences for M&G species.

The top ten most common M&G species were also consistent with D’Cruze et al.’s (2019) results for taxonomic preferences; they found preferences included carnivores, even-toed ungulates, odd-toed ungulates, penguins and primates (covering nine of the top ten species found here). Birds of prey were the only animal in the top ten most common M&G species that were not highlighted by D’Cruze et al. (2019); perhaps suggesting that interactions with birds of prey are more popular with zoo visitors in the UK than with zoo visitors globally. However, we cannot directly correlate the most commonly offered M&G species with public preference, as we have no data on which M&Gs provide the most revenue for zoos or what factors influence the zoo’s decision to offer M&Gs with a particular species.

What are the costs, duration and participant restrictions?

The mean price of a M&G was £71.40 per person, with a range from £6 per person (‘Feed the Lemurs’ at Five Sisters Zoo) to £600 (‘Polar Bear Experience’ at Yorkshire Wildlife Park). It should be noted that the £600 M&G was for two people to participate, however this was the base price so would be the cost for a single participant as well.

The mean price for the top ten most common species is shown in Table 4, demonstrating the variation in price depending on the animal, with big cats having a much higher mean price (lion £103.86; tiger £106.39) than species such as meerkats and tapirs (meerkat £50.80; tapir £47.06).

Figure 1 shows variation in mean M&G price by zoo region (specified on the BIAZA website) and whether admission to the zoo is included. The East Midlands and Yorkshire have the highest mean M&G prices; these regions offer the top three most expensive M&Gs recorded (Yorkshire Wildlife Park, Woburn Safari and Twycross Zoo offering M&Gs with polar bears, elephants and tigers respectively).

[Figure 1 here]

M&G prices will depend on both the popularity of the species and the demand for those M&Gs, for example as many zoos offer meerkat M&Gs they have a lower than average price, whereas there is only one polar bear M&G on offer in the UK, so the price is particularly high. There is a risk that by putting economic values on interactions with different species, zoos may be contributing to the problems associated with the commodification of wildlife (Belicia & Islam, 2018), however zoos rely on income from visitors, not only to maintain their animal collections, but also to contribute to field conservation projects; with over 350 million USD reportedly spent in 2008 by WAZA zoos to directly fund wildlife conservation (Barongi et al., 2015; Gusset & Dick, 2011). Offering additional-cost AVIs could bring in more revenue and potentially help to fund important conservation work, which is particularly crucial at a time when many zoos were reporting financial losses due to COVID-19 related closures (BIAZA, 2021b).

Most M&Gs include zoo admission in the price of the M&G (n=296; 79%). The remaining M&Gs either don't include admission or don't specify this on their website. The price of M&Gs is much higher for those that do include admission; with a mean price of £79.81 for those with zoo admission included, and £34.98 for those that specify zoo admission is not included in the price. Given that a peak-price adult general admission ticket to ZSL London Zoo cost £35.50 in summer 2022 (ZSL, 2022), it seems that M&Gs with admission included in the total price are usually more expensive overall than those where admission must be purchased separately.

Most M&Gs require pre-booking (n=322; 86%); suggesting that M&G participants usually plan their experience in advance and that the M&G may be the primary purpose for their zoo visit. Therefore M&G participants are likely to have different expectations for animal contact compared with zoo visitors who participate in AVIs included in the cost of a zoo visit, such as talks, shows or opportunistic interactions at animal enclosures.

The duration of M&Gs (Table 5) was included on most webpages (n=327; 87%), the average length was 36 minutes, but the majority last between 16 and 30 minutes (n=226; 69%). Only 6% (n=21) lasted over an hour, and those longer M&Gs had a higher mean price of £121.83 per person.

Duration in minutes	Count of M&Gs
Under 15	14
16 to 30	226
31 to 45	29
46 to 60	37
61 to 75	3
76 to 90	7
91 to 105	1
106 to 120	10

Table 5: Frequency of M&Gs duration by 15-minute time ranges (n=327)

The limited duration of M&Gs could affect their educational content and participant satisfaction, as previous studies on marine mammal interactions have shown that tourist enjoyment is influenced by the quantity and quality of information provided (Curtin &

Wilkes, 2007; Lück, 2003; Mayes et al., 2004). The BIAZA Close Contact Policy (2019, p.2) states that AVIs ‘MUST ensure that the message of each close contact situation is linked to education and public engagement and is not purely for entertainment/income generation’, but the few existing studies suggest that the educational impact of M&Gs may be limited (Clifford-clarke et al., 2022; Whitehouse-Tedd et al., 2021). There is a danger that shorter M&Gs, and those without sufficient educational messaging could be considered superficial photo opportunities.

We found the mean maximum number of participants per M&G was three people, with a median and mode of two people, and a range of up to 12 people. The mean maximum number of participants for the top ten most common species are shown in Figure 2; these figures have been included to two decimal places to show the variation between species.

[Figure 2 here]

The mean minimum age requirement for M&G participants was 8.5 years old, with a median and mode of eight years. There were 128 M&Gs (34%) that allowed children under eight to participate. Most M&Gs (n=250; 67%) specified that participating children must be accompanied by an adult. The mean minimum age requirements for the top ten most common M&G species are shown in Figure 2; mean age requirements were higher for M&Gs with lions (12.5 years), rhinos (10.75 years) and tigers (10.31 years).

Offering M&Gs with higher participant numbers and lower age restrictions may increase booking numbers but could be more likely to compromise animal welfare, as research has consistently shown that increased visitor numbers tend to have a negative impact on zoo animals (Sherwen & Hemsworth, 2019). Higher participant numbers could also affect visitor

satisfaction, as Borg et al. (2020) found a negative relationship between group size and payment amount for a pay-what-you-want wombat M&G in Australia. We suggest that there is a need for research on the impact of young children participating in M&Gs on animal welfare as many M&Gs allow children under eight years old to participate and don't necessarily specify whether children must be accompanied by an adult.

What type of interactions are offered?

There were 280 M&Gs (75%) that specify the interaction involves feeding or 'helping to feed' the animal, and only one M&G specified that it does not include a feed. Active animals are popular with the public (Carr, 2016; Moss & Esson, 2010; Whitworth, 2012) and feeding is likely to increase animal activity. Studies have also shown that public feeding can be enriching for some species (Fernandez et al., 2021; Jones et al., 2016; Orban et al., 2016), so including a feed in a M&G could make sense for both animal welfare and participant satisfaction. However, some zoos may be using food to encourage human-animal interaction in species that would otherwise avoid contact and should be careful to ensure that the use of food in M&Gs does not cross the line into fully-contrived tourist experiences by encouraging unnatural behaviours in M&G species. It would be worth investigating whether offering a feed affects participant experience or whether zoos are making assumptions about what the public want.

The most prevalent AVI type according to the global study by D'Cruze et al. (2019) was 'petting'; however, we found that most BIAZA zoos didn't specify whether M&Gs involve physical contact with the animal (n=251; 67% of M&Gs). For those that did describe the contact allowed with the animal during the M&G, 20 (5%) specify no physical contact

allowed, 63 (17%) specify some form of physical contact (e.g. hand feeding), and 40 (11%) suggest a high level of physical contact with the animal such as stroking or petting.

Most M&G webpages (n=212; 57%) include images showing an animal and participant present in the same photo, and 166 of those images (44% of M&Gs) show physical contact between the animal and participant. This inconsistency between images and descriptions of M&Gs may affect participant expectations for physical contact with the animal even if it is not directly specified in the M&G description.

A quantitative content analysis of M&G titles was used to identify which terms were most frequently used by zoos to describe M&Gs. Figure 3 shows all words or phrases (excluding species names) in a word cloud to illustrate this. The most frequently used terms in titles of M&Gs were 'experience' (n=170), 'encounter' (n=74) and 'meet' (n=54). Words related to feeding were used in M&G titles 63 times; words describing proximity were used in ten titles; and words describing physical contact were used in eight titles. This shows that M&Gs are usually sold as opportunities to 'experience', 'encounter' or 'meet' an animal, regardless of whether the interaction involves a feed, and demonstrates why the concept of a M&G may be more relevant than looking at 'feeding' or 'petting' as specific AVI types.

[Figure 3 here]

A small minority of BIAZA zoos actively encourage physical contact with M&G animals by using words such as 'tickle', 'cuddle' and 'tummy rubs' in M&G titles. Studies have shown that many AVIs in zoos do not have a negative welfare impact on popular M&G species such as penguins, meerkats, tapirs, lemurs and giraffes (Jones et al., 2016; Martin & Melfi, 2016; Orban et al., 2016; Saiyed et al., 2019). However, handling or other direct physical contact

may increase the likelihood of causing stress and there is insufficient data on the impact of interactions on many M&G species (Spooner et al., 2021). For example, there is no research on the impact of M&Gs on red pandas, one of the top ten most commonly used species by BIAZA zoos, that are known to be naturally shy and easily stressed (Glatston et al., 2022) and M&Gs with this species are specifically discouraged by Kappelhof and Weerman (2020). We highlight the importance of allowing the animal the choice to participate in an AVI and suggest that this element of choice, particularly where physical contact is involved, is essential to reduce the likelihood of negative impacts to animal welfare.

M&G Definition

M&Gs (often referred to by zoos as ‘experiences’ or ‘encounters’) are a type of additional-cost AVI, commonly offered by BIAZA zoos, with a single specific (often mammal) species. The interaction is primarily sold as a chance to ‘meet’ the animal, and may include physical contact, feeding or increased proximity to the animal, but zoos are often vague about exactly what M&Gs involve. M&Gs are short experiences, often lasting 30 minutes or under, usually must be booked in advance and are available, with age restrictions, to a limited number of participants.

We believe that this definition may be more useful for future research than the system proposed by D’Cruze et al. (2019) as M&Gs may include both petting and feeding (two different categories in D’Cruze et al.’s system) and BIAZA zoos don’t always specify whether a M&G involves physical contact with the animal. The cost of M&Gs and necessity for pre-booking will affect which zoo visitors participate, and will affect participant expectations for physical contact with animals in a M&G. We do not think that M&Gs are directly comparable with AVIs included in the price of a zoo visit that are available to all zoo

visitors, such as talks, shows or opportunistic interactions at animal enclosures, and believe that future AVI research should take this into consideration.

The concept of paying to ‘meet’ an animal could be considered similar to other non-zoo captive-wildlife tourist opportunities, such as exploitative animal photo prop experiences, which is why we believe that further research into M&Gs offered by zoos is necessary.

Directions for future research

We have suggested that AVIs in semi-contrived tourism settings should allow the animal the choice to participate, and that the animal should not be made to behave in unnatural ways for human entertainment. We have also shown that some BIAZA zoos encourage physical contact with animals in M&Gs, and there is a danger that some M&Gs could be considered fully-contrived experiences, particularly where handling or feeding is involved. The WAZA Guidelines for Animal-Visitor Interactions (WAZA, 2020) state that animal welfare should not be compromised by AVIs offered by zoos and recommend consideration of which species are included, but leaves the decision of which species or individuals are appropriate for AVIs to the discretion and expertise of the zoo. Given the ubiquity of AVIs worldwide and the range of M&G species on offer just in BIAZA zoos there is a need for more specific guidance on using animals in AVIs without compromising their welfare and we believe that more research is necessary.

There are risks associated with offering physical contact between animals and participants in M&Gs that have not been fully explored by previous research; particularly in terms of the public’s perceptions of these interactions. Minarchek et al. (2021) found that viewing videos of armadillos being handled had a negative impact on zoo visitors’ perceptions of welfare in comparison with videos where a presenter did not touch the animal, and negative perceptions

of animal welfare are likely to decrease support for zoos (Miller, 2012). Viewing images or videos of animals with humans (in comparison to the animal alone) can have a negative effect on people's perceptions of species conservation and that animal's suitability as a pet (Clarke et al., 2019; Leighty et al., 2015; Ross et al., 2011; Shaw et al., 2022). This suggests that viewing M&Gs, or images of M&Gs, could undermine zoos' conservation missions by sending the wrong message to the public about the role of zoos and the animals involved with M&Gs; that the animals have poor welfare, are not endangered, or would make good pets.

There is also a danger that offering M&Gs could encourage AVIs in fully-contrived tourist settings, such as animal photo prop opportunities. Van der Meer et al. (2019) found that people viewing images of wild cat species involved in human interactions were more likely to want to participate in tourist experiences with wild cats. While we may be able to make an initial distinction between a good and bad M&G based on whether the animal has a choice to participate, we also need to consider whether the public can make that distinction and investigate the possibility that good zoos could inadvertently be promoting bad AVIs in other tourist settings. Tourists' awareness of animal photo prop issues has been shown to be limited (Moorhouse et al., 2015; Rizzolo, 2021b; Spooner & Stride, 2021), but research by Sampaio et al. (2021) suggests that good zoos can 'anchor' tourist perceptions to decrease support for bad captive-wildlife tourist attractions, which shows the importance of good zoos offering responsible M&Gs.

Most BIAZA zoos offer multiple different M&Gs and advertise them prominently on their websites. This study explored M&Gs on offer rather than how they are advertised, but the results suggest a need for research into how zoos promote M&Gs to potential participants, as images and descriptions used online are likely to reach a wide audience of zoo website visitors. Carr and Cohen (2011) found that the image zoos present on their websites, including promoting AVIs, has a primary emphasis on entertainment. While attracting M&G

participants through entertainment for income generation is important, this could undermine conservation and education messages (Carr & Cohen, 2011). Accredited zoos should be careful not to promote the idea that M&Gs are offered purely for visitor entertainment at the potential cost to animal welfare. There is also a need to investigate discrepancies between descriptions and images advertising M&Gs on zoo websites; where zoos may not specify that physical contact is allowed with an animal but may show physical contact in photos. Future studies should investigate how the public interpret the descriptions and images used by zoos to advertise M&Gs, and what implications this could have for zoos and M&G animals.

Further research is needed to explore the impact of M&Gs on both the animals and on the people exposed to them. De Mori et al.'s (2019) protocol for the ethical assessment of AVIs includes evaluating both animal welfare and human outcomes, but the authors define the people involved in AVIs as zoo visitors and staff. We suggest that this protocol, and zoo AVI literature in general, is missing the wider issue of the impact of viewing AVIs, including images or adverts, on public perceptions of AVIs, the animals involved in them, and the zoos offering them. We believe that research into public perceptions of M&Gs is necessary to be able to make any assessments on whether these can be considered ethical interactions.

Conclusion

This study is the first in the literature to define and describe a 'Meet & Greet' animal-visitor interaction offered by UK (BIAZA member) zoos. M&Gs offer participants the opportunity to meet specific animal species; under staff supervision; they take place inside the animal's enclosure or a behind-the-scenes area; may involve physical contact, feeding or increased proximity to the animal; with or without a physical barrier present. Most M&Gs in BIAZA zoos are offered with a single (often mammal) species, last for under an hour, are available to

a limited number of participants at an additional cost to the zoo entrance fee and must be booked in advance. We believe that this is a useful definition for future research to compare AVIs available in semi-contrived and fully-contrived tourism settings.

We suggest that zoos should be careful that M&Gs they offer do not cross the line into fully-contrived tourist experiences, by ensuring animals are given the choice of whether or not to participate in M&Gs and are not made to behave in unnatural ways for public entertainment. Zoos should also consider how M&Gs are advertised, as images promoting M&Gs will reach a larger audience than just M&G participants. There should be more awareness of the impact of offering M&Gs on the general public's perceptions of zoos, zoo animals, and the wider captive-wildlife tourism industry.

This is an initial study only and there is a need for research into M&Gs offered by zoos globally, but accredited zoos should be careful to ensure that the M&Gs they offer are not perceived by visitors as exploitative photo prop opportunities and are not inadvertently promoting unethical fully-contrived captive-wildlife tourist experiences.

Declaration of interest statement

The authors report that there are no competing interests to declare.

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Appendix A: Full list of M&Gs offered by BIAZA zoos

M&G species grouped by taxa	Number of M&Gs offered
Amphibian	1
Amphibian	1
Bird	48

Bird	1
Birds of prey	10
Flamingo and pelican	1
Hawk	2
Owl	7
Penguin	26
Rainbow lorikeets	1
Fish	7
Shark	6
Stingray	1
Invertebrate	4
Bugs	1
Butterfly and bug	1
Creepy crawly	1
Tarantula	1
Mammal	279
Aardvark	3
African animal	2
Alpaca	1
Ankole	1
Anteater	4
Armadillo	4
Bear	3
Beaver	1

Big cat	5
Binturong	2
Bush dog, maned wolf, tapir	1
Camel	1
Capybara	4
Carnivore	6
Cheetah	2
Chimp	1
Coati	5
Cusimanse	1
Donkey	1
Elephant	4
Equids	1
Farm animals	2
Fox	4
Fruit bat	2
Giant rabbit	1
Giraffe	22
Goat	1
Gorilla	4
Great apes	1
Hyena	1
Kinkajou	1
Koala	1

Large mammals	1
Lemur	27
Leopard	2
Lion	14
Lynx	3
Meerkat	38
Meerkat and lemur	1
Meerkat and otter	1
Mongoose	1
Monkey	6
Otter	8
Painted dog	1
Pig	1
Polar bear	1
Primates	2
Raccoon	1
Red panda	11
Red squirrel	1
Reindeer and mammal	1
Rhino	10
Sea lion	8
Seal	1
Siamang gibbon	1
Skunk	2

Sloth	4
Sloth and armadillo	1
Small mammal	2
Snow leopard	1
South American animals	2
Tamandua	1
Tapir	10
Tapir, meerkat, ring-tailed lemur	1
Tiger	14
Wallaby	4
Wolf	3
Multiple taxa	12
Birds of prey and meerkats	1
Bugs	1
Exotics	1
Meerkat, ferret and owl	1
Multiple	1
Predator	1
Reptile and amphibian	1
Reptile and bug	3
Tortoise and turaco	1
Unspecified species	1
Reptile	20
Chameleon	1

Crocodile	2
Komodo dragon	3
Reptile	5
Tortoise	8
Turtle	1
Unspecified taxa	3
Unspecified species	3
Grand Total	374

Figure captions

Figure 1: Mean price of M&Gs by zoo region and whether admission cost is included in the price

Figure 2: Mean maximum number of M&G participants and minimum age requirement (years) for the top ten most common M&G species (to 2 decimal places)

Figure 3: Word cloud of M&G titles (excluding species names)