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Normal redefined: Exploring decontextualization of lorises (*Nycticebus* & *Xanthonycticebus* spp.) on social media platforms

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Introduction: Decontextualization is a concept from psychology whereby new words are learned outside of the context of the here-and-now. Decontextualized language is used for discussing abstract concepts and is crucial to the development of academic language. When it comes to images, a dearth of context can lead to a lack of clarity, such as the use of ambiguous decontextualized images in environmental communication, leading to the promotion of greenwashing. Here we refer to decontextualization as the removal of wildlife from their wild ecological context. Images and videos of globally threatened species are increasingly popular on social media. Showing such taxa alongside humans may impact public perceptions of their abundance and need for conservation and can increase illegal trade. One group of animals that are particularly popular on social media platforms are the slow and pygmy lorises (*Nycticebus* spp., *Xanthonycticebus* spp.).

Methods: Here, we examined 100 videos from three popular social media platforms (YouTube, TikTok, and Giphy) to calculate how often and in which ways these videos remove slow lorises from their natural ecological and behavioural context. We also examined views and likes to determine viewer engagement trends. We used relevant content from each site to assess the presence of decontextualization using five conditions.

Results: In all but two videos, conditions of decontextualization were present and 77% of all videos had four to five conditions of decontextualization. Using Spearman correlation, we found a significant effect of decontextualization scores on the number of views and likes for YouTube and TikTok videos. Views were significantly higher when videos presented animals in anthropogenic settings (i.e., in human-made structures or in proximity of human artefacts). Additionally, views on TikTok and YouTube were significantly higher when animals displayed signs of stress or ill health and when they were in unnatural conditions.

Discussion: Our case study of lorises provides an example of the danger of decontextualizing wild animals on social media. Public preference for imagery where animals are neglected is indicative that better guidelines need to be put in place and policed by social media platforms. Additionally, conservationists need to develop strategies to promote wild imagery and further explore decontextualization if we are to understand and address the drivers of the rampant illegal wildlife trade online.

KEYWORDS

lorisidae, decontextualize, web 2.0, social media, conservation, YouTube, TikTok, Giphy

1 Introduction

Prolific and unsustainable trade of wildlife is a major threat to biodiversity across the globe (Maxwell et al., 2016; Cardoso et al., 2021), and emerging and established platforms on the internet have become conduits for the illegal trade of numerous species (Milner-Gulland, 2018). With the advent of web 2.0 technologies, many social media sites have arisen. Social media platforms (SMPs) have been identified to facilitate and directly stimulate the illegal wildlife trade and promote the keeping of non-human animals as pets (Nekaris et al., 2013; IFAW, 2018). The emerging discipline of critical animal media study has established that our mistreatment of nonhuman animals is due to public consent, and we need to understand why the public still supports this content in the media and SMPs (Almiron et al., 2018). Here, we examine illegal wildlife trade within the context of SMPs by examining online imagery of a group of legally protected species.

There is a growing trend in the media of displaying nonhuman organisms within an anthropogenic framework (Malamud, 2010). Displaying exotic pets in the media has been shown to promote positive perceptions of their exploitation and increase their demand, directly fuelling the wildlife trade in exotic animals (Sollund, 2011; Moloney et al., 2021). The proliferation of images and videos of animals in anthropogenic settings has been shown to be detrimental to the conservation of nonhuman animals (Schroepfer et al., 2011). For example, when primates were displayed in both natural and anthropogenic settings it was shown that images of primates in anthropogenic settings, and with humans, distorted public perceptions of their abundance and suitability as pets (Ross et al., 2011; Schroepfer et al., 2011; Leighty et al., 2015). Similarly, even when images of exploited chimpanzees (*Pan* spp.) are paired with overt explanations of the issues of such treatment, children remember the exploitation as a normal part of our interactions with chimpanzees (Bettinger et al., 2010). These findings have significant implications for primates that are popular on SMPs, such as slow and pygmy lorises (Nekaris et al., 2013; Nekaris et al., 2015).

Decontextualization is a term originally from psychology (Etheredge et al., 2021). Most often, the term is used to describe 'decontextualized language', which relates to language learning in

children, where new word definitions are learned outside of the here-and-now. The communicator typically assumes that the receiver knows as little as possible and is therefore explicit in how they explain the meaning (Gee, 2014). The receiver has to create meaning from the words alone. Decontextualized language is used to discuss abstract concepts as well as entities that are not present. The ability to create and use decontextualized language is a crucial skill in attaining literacy (Peterson and McCabe, 1994; Chatpongcharoen et al., 2021) and is linked to proficiency with academic language later in development (Uccelli et al., 2018). Decontextualized images have been used within an environmental communication setting precisely for their flexibility of interpretation. The ambiguity of generic images has been used to support communication in everything from educational documentaries to greenwashing, the "intentional action to mislead or deceive consumers with false claims on organization environmental posture" (Andreoli et al., 2017; Hansen, 2017).

Within our context, Malamud (2010) refers to the removal of wildlife from its proper ecological context as 'decontextualization' and for our work we will use his definition. However, we build upon their work by using a new methodological approach and research context. While Malamud explored decontextualization with qualitative methods within the context of traditional media, we assess the presence of decontextualization with a quantitative approach within the setting of social media. Nekaris et al., 2015 created a foundation for how to measure decontextualization quantitatively when they examined videos of lorises (*Nycticebus* spp., *Xanthonycticebus* spp.) on social media sites to determine whether uploaders violated the 'five freedoms' of animal welfare. Four of the conditions defined in their work not only quantified welfare but also measured decontextualization, (human/non-conspecific contact, presence of daylight, signs of stress or ill health, and unnatural conditions). Thus, we use these four established conditions, and an additional condition described below, to assess decontextualization across social SMPs.

Slow lorises are small nocturnal primates from Asia that live a strictly arboreal lifestyle and have a diet specialised for exudates and live prey (Streicher et al., 2012; Nekaris and Starr, 2015). Due to these highly specialised dietary and habitat needs, slow lorises have not thrived in even the best captive settings, where a diet of no to extremely low amounts of fruit is recommended (Fuller et al., 2013;

Cabana et al., 2019). Slow lorises possess many characteristic features that are considered ‘cute’, such as a large head, round face, and large neotenic eyes all of which induce caregiving behaviour in humans and are known as ‘baby schema’ (Glocker et al., 2009; Estren, 2012). It may be this cuteness that leads to the high demand for individuals in the illegal wildlife pet trade. Indeed, all species of slow loris are listed by the IUCN Red List as either Vulnerable, Endangered, or Critically Endangered. Extensive wildlife trade led CITES to ban the commercial trade of lorises in 2007 (Nekaris and Nijman, 2007) yet they remain heavily exploited in illegal trade for pets (Nijman et al., 2017), traditional medicines and use as photo props by tourists (Osterberg and Nekaris, 2015). Additionally, pet and photo prop slow lorises frequently display signs of stress including arm displays, stress faces, loss of hair and excessive venom production when in close proximity to humans (Nekaris et al., 2015). Being the only venomous primates, their teeth are also extracted to prevent their venomous bite and facial abscesses may be a sign of this in online imagery. A combined lack of success in captive breeding programmes coupled with restricted legal trade of slow lorises indicate that a majority of slow lorises on SMPs are illegally obtained from the wild (Nekaris et al., 2013; Musing et al., 2015). A 2015 study by Nekaris et al., examined 100 YouTube videos of slow lorises to determine whether they violated the ‘five freedoms’ of animal welfare and they additionally assessed whether the conditions contributed to likes or views. They found that approximately 31% of videos contained all five violations and unnatural environmental conditions (91%) and daylight (87%) were the most prominent conditions. Additionally, viewers liked videos more when slow lorises were displayed in daylight or when they showed signs of stress or ill health.

For the first time, we compare imagery of a threatened species across three SMPs, YouTube, TikTok, and Giphy, which have differing outreach/entertainment aims. In our case study, we examine decontextualization of lorises on each platform by breaking it down into individual conditions, based upon the categories from Nekaris et al., 2015. The main demographic difference between the SMPs appears to be the age of users, with a vast majority of TikTok and Giphy’s users being between 16–24 though they also reach into the 25–44 age range, while YouTube appears to cover nearly all age ranges relatively equally (Insider Intelligence, 2022; Similar Web, 2022). Our null hypothesis predicts that decontextualization will not differ across our three platforms. Although YouTube, TikTok, and Giphy have different purposes and formats we expect that decontextualization scores would be variable generally based on the content length and purpose. For example, Giphy only allows for brief content that is often just a few frames and the GIFs from the platform are mainly used as a tool to emote on other SMPs. For this content, we anticipate that most context cues will not be available to viewers, and the content will be the most decontextualized. In contrast, YouTube videos are longer, providing more opportunity for context, and can be entertaining or educational in nature. We therefore predict that there will be fewer elements of decontextualization (see Supplementary Material). We also expect that TikTok will fall somewhere in the middle as a short form video sharing platform that can host entertainment and

educational content. Based upon the prior literature, we predict that lorises in ill health and that are featured in daylight will have the highest numbers of views and likes amongst the conditions of decontextualization (Nekaris et al., 2015). We consider our results in the context of the social distortion hypothesis of Ross et al., 2011.

2 Methods

We conducted surveys of the top most viewed 100 relevant videos of slow lorises across three sites: YouTube (n=40), TikTok (n=40), and Giphy (n=20) – for descriptions and functionality see Supplementary Table 1. We selected YouTube because it is one of the most popular SMPs and we chose to survey Giphy because it is integrated into some of the most popular SMPs: Facebook, Instagram, Snapchat, and TikTok (Statista, 2021). Only 20 videos could be collected from Giphy due to the prevalence of a smaller range of slow loris images. Lastly, we surveyed TikTok because of its growing relevance amongst popular SMPs (Statista, 2021). Across all sites, we searched the phrase “slow loris” and only noted videos with lorises. The first thirty posts were coded by two independent researchers who were trained in the method. As the two coders had a 100% match in their coding, we did not see the need to run a reliability test, and the first author continued with the remaining coding. Each video was analysed *in situ* and the five main conditions for decontextualization were recorded, including human/non-conspecific contact, daylight, signs of stress or ill health, unnatural conditions (Nekaris et al., 2015) as well as a novel measurement of anthropogenic context (Table 1). We recorded the five conditions for each video as either present (1) or absent (0) and combined these measurements to create a decontextualization score (DS) for each video, with 0 indicating no presence of the five conditions up to 5 indicating the presence of all conditions (See Table 1 for coding definitions). Additionally, the number of views and likes were recorded for the posts on YouTube and TikTok to measure viewer engagement. These data were not able to be recorded for the Giphy images as this measurement is not provided by that SMP.

2.1 Data analysis

We ran a Spearman non-parametric test to determine the correlation between decontextualization score and the number of likes/views. We then ran Generalised Linear Mixed Models (GLMMs) to understand the influence of each decontextualization condition (i.e., anthropogenic context, daylight, human non conspecific contact, signs of stress or ill health, unnatural conditions) separately on the number of likes and views on TikTok and YouTube videos. We used the SMP and user ID as random effects in the analysis. We used the length of time that the video had been available (as a log of days) as offset in the analysis. We ran all analyses with R v 4.1.0. We ran GLMMs via the “glmmTMB” function in the “glmmTMB” package as this function includes several fit families that are suitable to deal with count distributions (Brooks et al., 2017). We tested the different families present in the package and selected the model based on the QQ plot

TABLE 1 Description of each of the five conditions for decontextualization that we coded in 100 slow loris videos across three social media platforms.

Condition	Description of the condition	Example from SMPs
Human/non-conspecific contact	The individual was either touched, stroked, manipulated, poked, or otherwise handled or held by a human; the individual was placed on or near a domestic pet such as a cat, dog or guinea pig	Giphy: A loris is tickled by a human while in an apartment
Daylight	The individual was observed in daylight or artificial daylight conditions	TikTok: A loris is held by a tourist in bright afternoon sun on a beach
Signs of stress or ill health	The individual showed signs of stress. This included defence threats, crouching, folded mouth, freezing, stereotypic behaviour, attacking (i.e., biting), scratching, scream or chitter vocalisations [Fitch-Snyder and Schulze, 2001]. Signs of ill health included obesity (as measured by physical fat folds on the loris' body), open wounds, hair loss, cut and/or swollen hands, infections due to teeth being clipped	YouTube: An overweight loris that has had its teeth extracted is aggressively vocalising and attempting to bite a person who is trying to touch it
Unnatural conditions	Natural substrate or vegetation were not evident throughout the duration of each video; unnatural food was presented to the slow loris (rice, sweets, excessive fruit)	Giphy: A slow loris eats a rice ball while sitting inside a cage in an apartment
Anthropogenic context	The individual is in a manmade structure (e.g. cage, house, patio) or human artefacts are present (e.g. blankets, drink umbrellas, sun umbrellas, cutlery, guns, phones, brushes, blankets, beds, couches, tables, curtains, food containers, baskets, laundry hampers, motor bikes, money, diapers, clothing racks, etc.)	TikTok: A loris climbs on curtains inside an apartment

residuals and residual vs predicted plot from the package “DHARMA”. We calculated the pseudo R-squared *via* the “pR2” function from the package “pscl”. We considered $p = 0.05$ as level of significance.

To visualise how decontextualization factors were combined within videos we ran Non-Metric Dimensional Scaling (NMDS) with presence/absence of each element for each video. We used the “metaMDS” function in the package “vegan” to run the NMDS. The NMDS ordination was plotted using the ggplot package with decontextualization factors indicated with labels and arrows and images indicated with points.

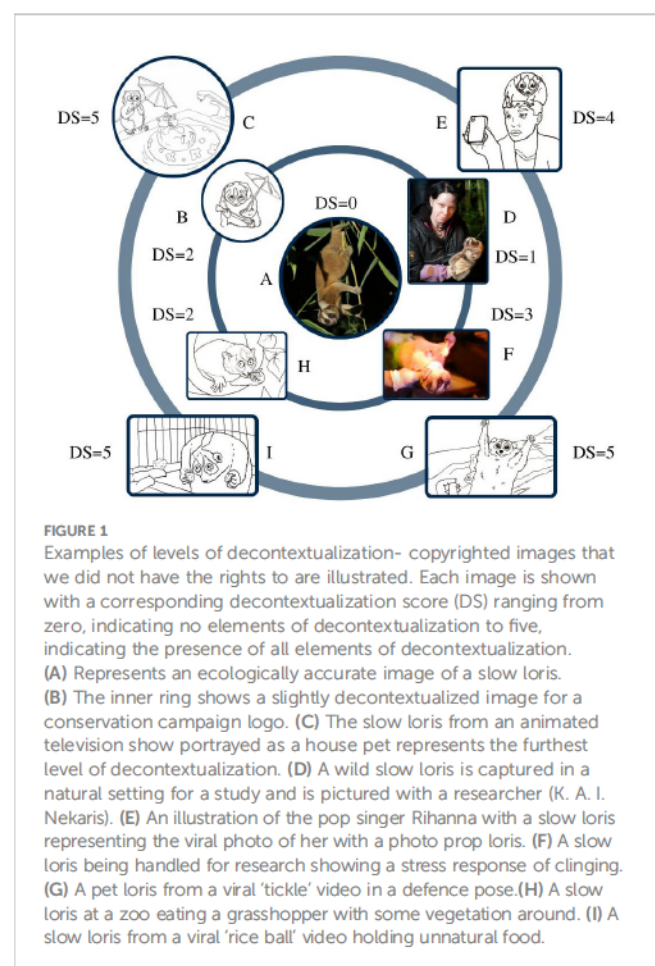
We then ran statistical analyses to determine if the elements of the decontextualization score varied between SMPs and which elements were more characteristic. We tested differences in the first two dimensions of the NMDS via Kruskal-Wallis tests and, if significant, we ran pairwise comparisons using Wilcoxon rank sum test and Bonferroni-Holm correction.

3 Results

Imagery ranged from ecologically correct portrayals to videos completely devoid of natural behaviours or settings as well as animated material (Figures 1, 2). Figure 1 provides examples of decontextualized imagery found on the sampled SMPs and illustrates what decontextualization score (DS) the videos would receive. These scores are based upon the number of abnormal conditions present in the loris imagery.

Of the 100 videos analysed across the three platforms, the average decontextualization score was found to be 4.04 (YouTube- averaged 4.1, TikTok- averaged 3.75, Giphy- averaged 4.5) and 77% of all videos had four to five conditions of decontextualization present. The average length of the videos were as follows: YouTube- averaged 327.6 seconds, TikTok- averaged 27.2 seconds, and Giphy- averaged 2.3 seconds. Despite this considerable difference in duration, average decontextualization scores across the three SMPs showed no clear differences, with all three displaying high decontextualization scores and high prevalence of decontextualization conditions (Figure 2). Only

two of the 100 videos had no elements of decontextualization: a YouTube video uploaded by Nat Geo WILD and a clip from the same video on Giphy and TikTok had no videos of fully contextualized lorises. Across all platforms, three videos had only one condition, five videos had two conditions, 13 had three conditions, 33 had four conditions, and 44 contained all five conditions of decontextualization.



The most prevalent unnatural conditions across all videos were daylight (93%) and ‘anthropogenic context’ (91%), followed by signs of stress or ill health (76%), human/non-conspecific contact (73%), and ‘unnatural conditions’ (71%). ‘Anthropogenic context’ was highly common across all platforms (Giphy- 95%, YouTube- 90%, TikTok- 90%) and daylight was similarly prevalent across all SMPs (Giphy- 95%, YouTube- 93%, TikTok- 93%). ‘Unnatural conditions’ were highest on Giphy (95%) followed by TikTok (78%) and in approximately half of YouTube videos (53%). Signs of stress or ill health were highest on Giphy (95%), then YouTube (83%), and lowest on TikTok (60%). Human/non-conspecific contact was most common in YouTube videos (93%), followed by Giphy (70%), and then TikTok (55%) (Figure 2).

YouTube videos averaged 1,215,813 views and 8,898 likes and TikTok averaged 586,874 views and 190,098 likes. We found a significant correlation between decontextualization scores and number of views, but not between decontextualization scores and number of likes (Figure 3). When conditions were analysed separately, the number of views on TikTok and YouTube videos were significantly higher when videos presented lorises with signs of stress or ill health and in unnatural conditions (Table 2; Figure 4). The number of likes on TikTok and YouTube videos were significantly higher when lorises in videos were in an anthropogenic context.

All elements of the decontextualization score were important in defining differences between videos, with human/non-conspecific contact and unnatural conditions having the highest r-squared (NMDS: stress = 0.08; Table 3; Figure 5). Videos on TikTok and YouTube had more diverse elements of the decontextualization score than videos on Giphy (Figure 5). NMDS1, mainly characterised by higher frequency of daylight and lower frequency of human/non-conspecific contact or signs of stress or ill health, was significantly different between SMPs (Kruskal-Wallis: $\chi^2 = 19.25$, $p < 0.001$). Pairwise comparisons using Wilcoxon rank sum test and Bonferroni-Holm correction revealed that YouTube had a lower NMDS1 than Giphy ($p < 0.001$) and TikTok ($p < 0.001$), while

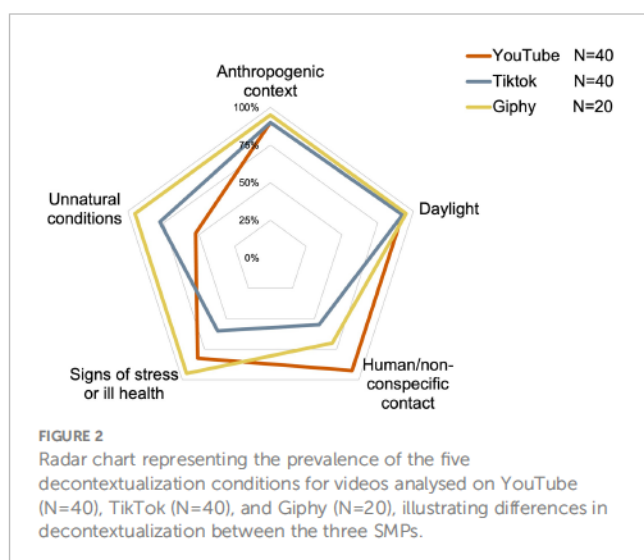


FIGURE 2
Radar chart representing the prevalence of the five decontextualization conditions for videos analysed on YouTube (N=40), TikTok (N=40), and Giphy (N=20), illustrating differences in decontextualization between the three SMPs.

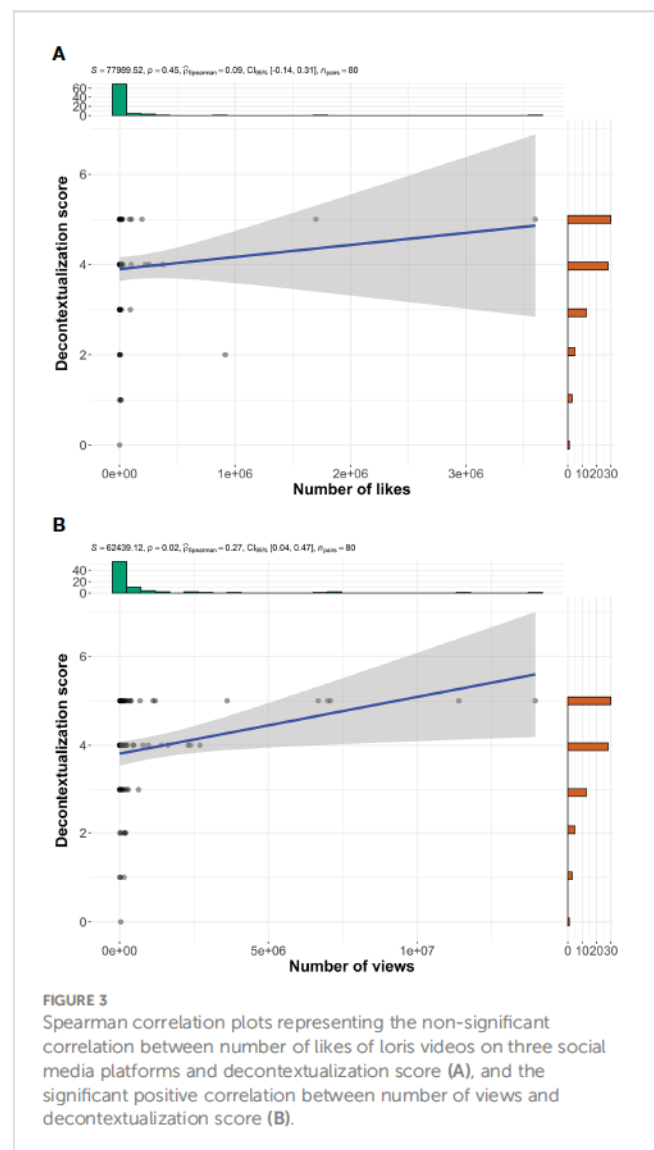


FIGURE 3
Spearman correlation plots representing the non-significant correlation between number of likes of loris videos on three social media platforms and decontextualization score (A), and the significant positive correlation between number of views and decontextualization score (B).

no differences were found between Giphy and TikTok ($p=0.477$). NMDS2, mainly characterised by unnatural conditions and anthropogenic context, was significantly different between SMPs (Kruskal-Wallis: $\chi^2 = 12.89$, $p=0.002$), with YouTube having a lower NMDS2 than Giphy ($p=0.004$) and TikTok ($p=0.005$), while no differences were found between Giphy and TikTok ($p=0.447$).

4 Discussion

We found that decontextualization occurred at high levels on all three platforms we monitored. Our results also support previous research that showed that such decontextualization levels are linked to higher levels of viewer interaction through views and likes (Nekaris et al., 2015; Kitson and Nekaris, 2020). In 2020, Kitson and Nekaris conducted a study in Turkey focused on two-shot images, posted to the popular SMP Instagram, of tourists with photo-prop lorises. The study found that, regardless of the attractiveness of a photo (lighting, focus, rule of thirds, and visibility), images of people with lorises gained significantly more

TABLE 2 Results of the Generalised Linear Models to understand the influence of each parameter used to calculate the decontextualization score on the number of likes and views on TikTok and YouTube videos. Reference categories for predictors: "Yes".

Response ^a	Predictor	Coefficient	Std. Error	Z-value	p-value
Likes	Intercept	3.60	1.56	2.31*	0.021
	Anthropogenic context	2.43	0.85	2.84**	0.004
	Daylight	1.32	0.91	1.45	0.148
	Human non conspecific contact	-0.07	0.79	-0.09	0.927
	Signs of stress or ill health	0.82	0.77	1.06	0.289
	Unnatural condition	0.07	0.58	0.12	0.902
Views	Intercept	7.48	0.89	8.40**	<0.001
	Anthropogenic context	0.71	0.73	0.97	0.334
	Daylight	0.75	0.75	0.99	0.320
	Human non conspecific contact	0.00	0.50	0.01	0.994
	Signs of stress or ill health	1.06	0.41	2.57*	0.010
	Unnatural condition	1.40	0.51	2.74**	0.006

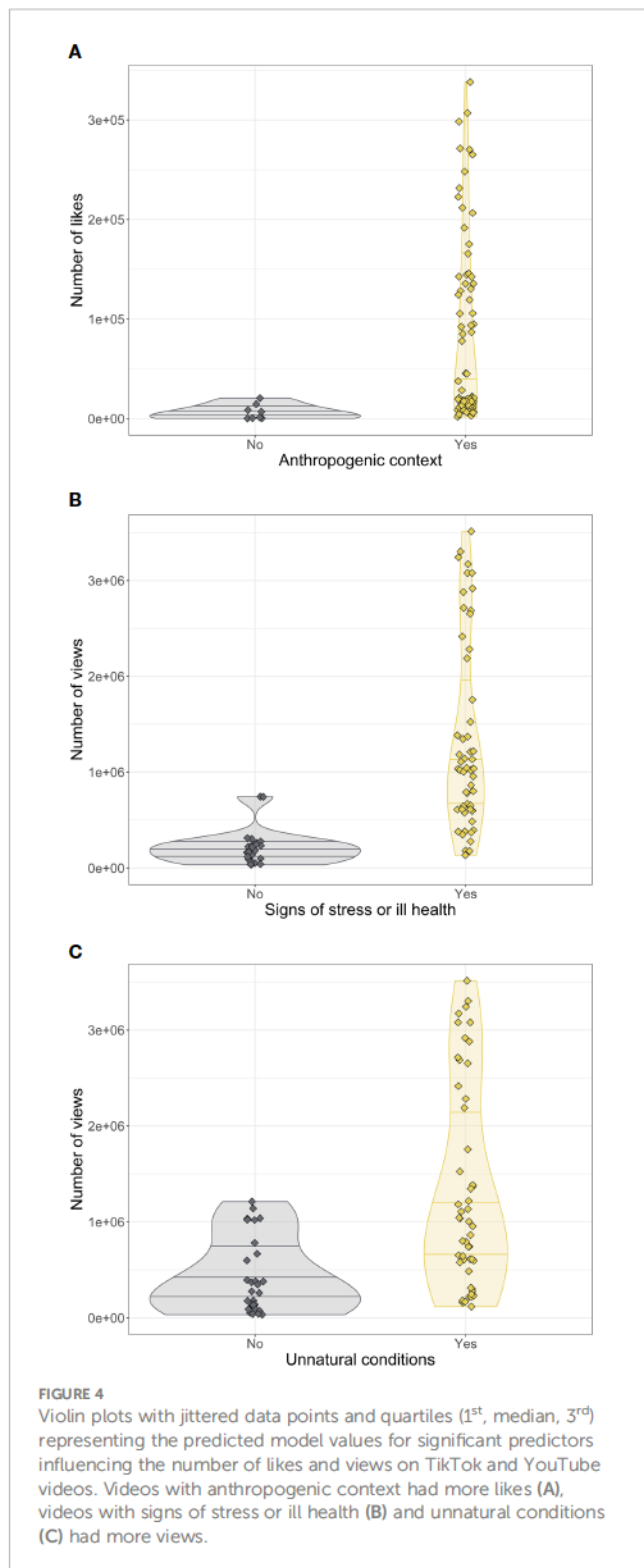
^aSelected family fit: genpois for Likes, nbinom2 for Views. *p<0.05; ** p<0.01; Pseudo R-squared: 0.517 for Likes, 0.247 for Views; random effects: Social Media platform (Likes: $\sigma^2 = 3.238e+00$; Views: $\sigma^2 = 1.073e-26$); user ID (Likes: $\sigma^2 = 2.744e-08$; Views: $\sigma^2 = 1.081e-08$).

likes than general photos. This lack of context for imagery hinders understanding and leaves interpretation open to the viewer (Peterson and McCabe, 1994; Hansen, 2017). Due to the flexible interpretation of natural imagery, decontextualized images have infamously been used to support greenwashing campaigns (Hansen, 2017). Prior research has established that displaying images of exotic animals in the media, especially in anthropogenic settings has negative consequences for their conservation and increases their desirability as a pet (Schroepfer et al., 2011; Sollund, 2011). The exploitation of slow lorises despite their protected status is prolific and stimulated by the advertising that happens on SMPs (Nekaris et al., 2013; Musing et al., 2015; Osterberg and Nekaris, 2015; Nijman et al., 2017; IFAW, 2018). Although some videos of slow lorises can potentially increase public understanding about certain aspects of slow loris conservation, a proper representation of the natural state and behaviour of slow lorises is crucial for creating positive effects.

The 100 videos of lorises that we analysed overwhelmingly displayed individuals in inappropriate settings. Decontextualization scores were not affected by the SMP's content type or general length as we predicted. Instead, our results support the null hypothesis that there is no difference and indeed all platforms showed equivalently high average decontextualization. Furthermore, it was not just private content producers decontextualizing lorises. Wild ecology was lost even in content produced by educational organisations such as Animal Planet (DS=4), Nat Geo Wild (DS=4), Seeker (DS=3), the Brookfield Zoo (DS=4), and the San Diego Zoo (DS=5). The videos across these five different educational institutions included all five conditions of decontextualization. The ubiquity of decontextualized content shown in these data have the potential to contribute to the normalisation of an image of a loris outside its ecological context, normalising its presence in the hands of humans (Malamud, 2010; Moloney et al., 2021).

There was a clear preference for videos that displayed lorises in anthropogenic contexts. This is illustrated by the fact that, on YouTube and TikTok, videos showing lorises in anthropogenic contexts had more likes than videos with natural settings. Moreover, videos with signs of stress or ill health and unnatural conditions also had more views than videos portraying healthy lorises in natural conditions. As we anticipated, these results are in line with previous findings on YouTube where portrayals of lorises in ill health and unnatural conditions had higher numbers of views and likes (Nekaris et al., 2015). Our findings are correlational, making further study necessary to fully understand the variables responsible for any causal relationship. Regardless, the further that popular images move away from ecological reality and the more human-centric they become, the easier it is to see animals as objects and accept images of them as unhealthy pets as 'normal' (Malamud, 2010; Moloney et al., 2021).

Figures that have historically helped to push the normalisation of lorises in contact with people were celebrities (Nekaris et al., 2013). Giphy bears the signs of this through animated GIFs of the pop singer Rihanna with a slow loris on her head (Figure 1). This is a direct reference to when the singer took a selfie with a slow loris that was illegally used as a photo prop on the street in Thailand. Famous individuals such as Ariana Grande, Haley Williams, Ricky Gervais, and more have actively directed their audiences to decontextualized loris content on YouTube in the past, such as the infamous tickle video, where a large portion of the viewers declared their desires and intentions to get one as a pet (Nekaris et al., 2013). Since its popularisation, it appears that decontextualized loris content now has the power to create fame and influence. Just over half of the most relevant videos on TikTok were uploaded by a single user, @yojenka, and displayed slow lorises as house pets. This content creator was quite influential, with over 200,000 followers and upwards of five million likes on her videos,



manufacturing a type of celebrity with this decontextualized content and implicitly pushing the message that this unnatural condition is normal. Although most of the content on TikTok was produced by a single user, analysis of the conditions of decontextualization showed that all videos on the platform had diverse elements of decontextualization. This illustrates that the decontextualized content is what is truly popular, not just particular users and this

tracks with previous findings (Nekaris et al., 2013; Kitson and Nekaris, 2020). Banning a single user will not stem the problem as creators can simply make another account or their place in the spotlight will be taken by a creator who is producing the same content. Mitigation of this problem needs to come from a higher level of content monitoring and reporting functionality from SMPs to combat this pervasive content. A case in point here is the 2009 ‘tickling slow lorises’ video mentioned above. Although campaigning meant that the original uploader deleted it, 1000s of copies remain, and were seen on all of the platforms in this study. There is a potential that restricting or banning content will ultimately lead people to seek it out (Jansen and Martin, 2015; Ohlheiser, 2020). Educational campaigns are needed to place slow lorises within accurate context to enhance ecological knowledge (Bergman et al., 2022), due to the striking lack of properly contextualized content even from educational institutions.

This decontextualization was brought to an extreme on 31 May 2021 when an animated television show entitled *Housebroken* was released by the Fox Broadcasting Company. The show follows the lives of anthropomorphised household pets; the cast of characters includes domestic animals such as dogs, cats, as well as a guinea pig, a tortoise, a goldfish, and a pygmy loris. The pygmy loris is named Tchotchke, defined by the Cambridge English Dictionary as a small decorative object, and he is the only non-speaking character. He communicates to the other animals only through body language and the use of a drink umbrella, which is part of his character design (for a representation similar to the character see Figure 1). This is a clear reference to the viral video of a pet pygmy loris, shown holding a drink umbrella (Nekaris et al., 2013). It has been demonstrated that YouTube content portraying prosimians as pets leads to viewers desiring them as pets and even proclaiming to take steps to acquire one (Nekaris et al., 2013; Clarke et al., 2019). This television programme may reinforce the social acceptability of owning lorises as pets and may contribute to the view that slow lorises are good pets as it portrays the character as quiet, tame, and friendly. The fact that the only exotic animal included was a pygmy loris highlights the extent that decontextualization can normalise pet keeping. This normalisation originates from the social proof phenomenon in which people copy the actions of others because they presume that an action is acceptable if other people are doing it. On SMPs and in the media, widespread imagery with views, likes, and acclaim heavily influence the perceptions of viewers (Schnuerch and Gibbons, 2015; Fong et al., 2020).

Slow and pygmy lorises represent a model group for understanding decontextualization due to their prolific exploitation (Nekaris et al., 2015; Osterberg and Nekaris, 2015; Nijman et al., 2017; Kitson and Nekaris, 2020). Our findings indicate a need to explore how other species are decontextualized on SMPs. There are numerous species that are similarly portrayed as pets and shown in non-natural and often anthropogenic contexts on SMPs— such as meerkats (*Suricata suricatta*), kinkajous (*Potos flavus*), ring-tailed lemurs (*Lemur catta*), squirrel monkeys (*Saimiri* spp.), and capuchins (*Cebus* spp. & *Sapajus* spp.) (Vázquez et al., 2016). In particular, sloths (*Bradypus* spp. & *Choloepus* spp.) face equivalent threats to slow lorises and have a high demand in the illegal pet trade and photo prop industry (Moreno and Plese, 2006;

TABLE 3 First and second axes of the Non-Metric Dimensional Scaling and relative importance of each parameter.

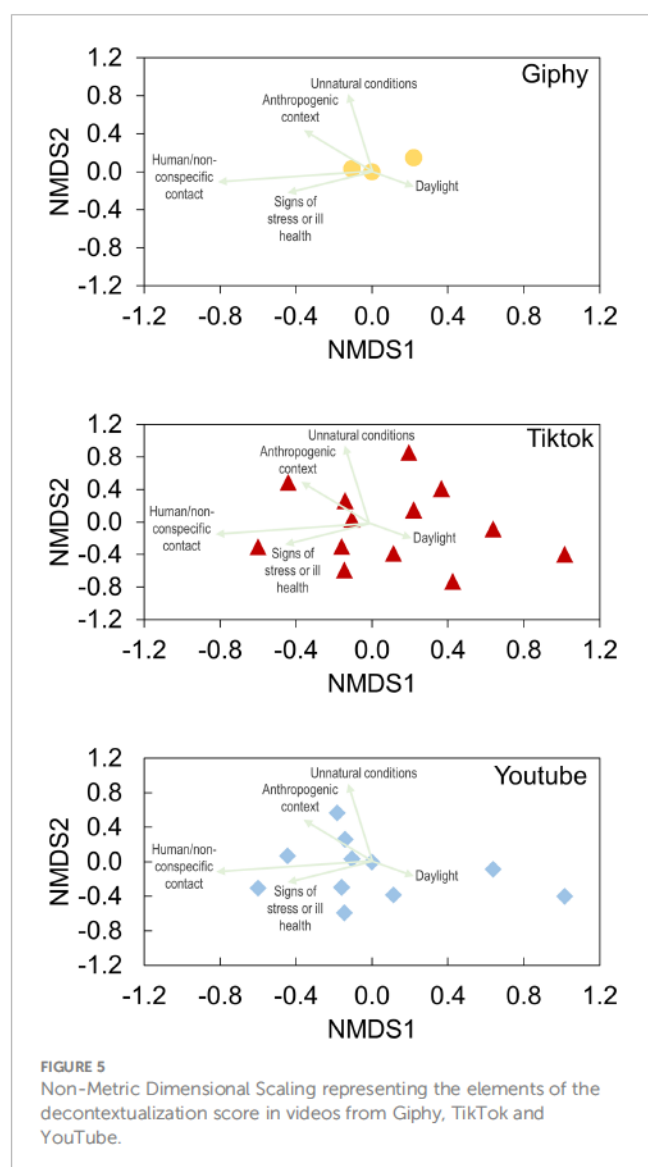
Parameter	NMDS1	NMDS2	r-squared	p-value
Anthropogenic context	-0.684	0.730	0.331	0.001
Daylight	0.880	-0.476	0.117	0.012
Human/non-conspecific contact	-0.954	-0.301	0.733	0.001
Signs of stress or ill health	-0.808	-0.589	0.344	0.001
Unnatural conditions	-0.166	0.986	0.664	0.001

Carder et al., 2018). Sloths are nocturnal, slow-moving mammals that have a large round face with a permanent smile that makes them appear ‘cute’ in the same way as the slow loris (Glocker et al., 2009; Estren, 2012). Sloths also endure clipping of their claws and their teeth to make them easier to handle (Carder et al., 2018), which is a parallel to the tooth extractions in the slow loris trade (Nekaris et al., 2010). Images of sloths are prominent in the media (Lenzi et al., 2020) and they are seemingly decontextualized in the

same manner as the slow loris, which was particularly heightened after celebrity endorsement from actress Kristen Bell when she appeared on the Ellen Show, filmed in the USA, in 2012 describing how a live sloth was used as entertainment at her birthday party. This indicates a pattern of decontextualization and validation that should be explored in further research on additional taxa. Future studies should also focus on how the diverse conditions of decontextualization impact public attitudes towards the animals on display, their trade as pets, and the viewer’s perceptions of what behaviours are natural for species impacted by decontextualization (c.f., Ross et al., 2011; Schroepfer et al., 2011).

These data show that overall, YouTube, TikTok, and Giphy need more properly contextualized content that shows lorises in natural scenes, specifically in nocturnal and ecologically appropriate settings (e.g., in the dark interacting with natural substrates). Content producers should also focus on only portraying lorises in contact with conspecifics and portraying healthy lorises that are not exhibiting stress-related behaviours or ill health. Where Giphy needs sweeping content reforms for decontextualized conditions, YouTube needs particular focus on anthropogenic context, daylight, human/non-conspecific contact, and signs of stress or ill health. TikTok need to focus changes mostly on anthropogenic context, daylight, and unnatural conditions. With regard to content moderation, SMPs should attempt to make connections with established loris conservation organizations to create guidelines for filtering out inappropriate loris content.

Our findings indicate that there is a need for an examination of the animal-based content present on SMPs. Social media has great potential to connect users with wildlife in ways that promote appropriate concern and understanding (Pimentel, 2022). Within a zoo context, images of animals shown with keepers have been demonstrated to increase viewers’ willingness to donate to conservation; yet our findings showed zoos also contributed to the decontextualization of animal imagery (Spooner and Stride, 2021). Conservation and educational organisations should examine the ways that they portray non-human animals in their posts on SMPs. They should not only follow IUCN guidelines to avoid circulating images of humans in close proximity to primates (Waters et al., 2021), but conservation organisations should also be aware of the presence of decontextualization conditions in their content so that their messages are not misconstrued. Decontextualization is an issue that needs to be considered and addressed by the conservation community at large and research regarding why the public supports decontextualized animal imagery is critical for the future of conservation efforts.



This study was limited in the number of SMPs that were included, and the volume of data analysed. Future studies of decontextualization should include, and directly sample from, other popular SMPs such as Instagram and Facebook. It would have been valuable to get a sample of all the content relevant to slow lorises instead of the most popular or relevant content. Future research may additionally focus on how slow and pygmy lorises are specifically portrayed by science education and zoological organisations as these may be seen by audiences to be endorsing or approving decontextualized posts through their own social media presence.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the animal study because this study was based completely online and focused on analysing content created for web 2.0 sites by the public as well as private institutions. We examined how videos portrayed a specific endangered animal. We did not perform the study with live animal subjects.

Author contributions

KN and LQ contributed to conception and design of the study. MC performed the statistical analyses, created most figures, and wrote up results with LQ. LQ wrote the initial manuscript draft and KN and KF reviewed and edited the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fcosc.2023.1067355/full#supplementary-material>

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