COMMENTARY

Commentary on Coram et al. (2021) on the use of Facebook to understand marine mammal stranding issues in Southeast Asia

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Abstract

We reviewed Coram et al. (Biodivers Conserv 30:2341–2359, 2021, https://doi.org/10.1007/s10531-021-02196-6), a paper that highlights the use of social media data to understand marine litter and marine mammals in Southeast Asia. While we commend its intent, we find that the methodology used and conclusions drawn portray an incomplete and inaccurate perception of how strandings, stranding response, and analysis of stranding data have been conducted in the region. By focusing on investigative results revealed by a very limited search of one social media platform (Facebook), using only English keywords, and insufficient ground-truthing, Coram et al. (2021) have, unintentionally, given the perception that Southeast Asian scientists have not conducted even the bare minimum of investigation required to better understand the issue of marine litter and its impact on marine mammals. In this commentary we provide a more accurate account of strandings research in Asia and include recommendations to improve future studies using social media to assess conservation issues.

Keywords Social media · Data mining · Asia · Whales · Dolphins · Strandings · Plastics

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Commentary

Social media is frequently used as a data gathering tool as these platforms can disseminate a wide array of information quickly and in real time. Social media content can be useful to monitor events, such as earthquakes, and as a tool to improve responses to such events (Crooks et al. 2013). However, such information is inherently biased towards specific user groups and geographic regions (Kemp 2018). Social media data is biased by active posters (Li et al. 2013; Di Minin et al. 2015), and thus fails to capture overall social opinion and behaviour. Therefore, information on social media should be viewed as supplementary to data derived from scientific studies (Sullivan et al. 2019) and should be ground truthed.

We reviewed Coram et al. (2021), a paper that highlights the use of Facebook data to understand marine litter and marine megafauna in Southeast Asia. Although Facebook is a popular social media platform in Asia, other platforms are used in the region, e.g., Instagram (162.9 million users in Asia; Kemp 2021a) and Twitter (49.2 million users in Southeast Asia; Kemp 2021b). In some countries, local platforms such as Sina Weibo in China surpass the use of western-centric social media (Asur et al. 2011; Zhang and Pentina 2012). Thus, by using only Facebook information, the authors gleaned a fraction of the available information on cetacean strandings.

The importance of ground-truthing social media posts

Studies using data obtained from social media may not be perfectly replicable because data on social media platforms are inaccurate and not permanent. When an account is deleted, that account's data is lost. Likewise, users can change their data by making edits to existing posts. Such was the case for some stranding and bycatch posts on Facebook in Malaysia. When the owner of the account was alerted to the possibility of being reprimanded for sharing photographs of bycaught cetaceans, the post was subsequently deleted. For those who do not work full time in the region, such data might not be included in their data mining process, while local researchers who monitor platforms regularly would be able to detect and document these events. In some cases, posts can be intentionally misleading. Users may post a picture from years ago without properly identifying the year the picture was taken. It is also common for users to tag a post with the wrong location (Sullivan et al. 2019). Thus, ground-truthing data mined from social media is crucial. Furthermore, a reliance on social media alone may result in a failure to capture the full 'picture' with regards to how a stranding was investigated.

In addition, necropsies are usually conducted out of the public eye, e.g. in research facilities in the Philippines, Malaysia (as in the case of Gunalan et al. 2013), Indonesia, Cambodia and Thailand. Thus, posts from bystanders during the initial phase of a stranding event, e.g., on the beach, may not provide sufficient information upon which to conduct detailed analyses of the stranded animals' health or likely cause of death. In Thailand, Indonesia, Cambodia and Malaysia, necropsy reports are shared with national management authorities and not further published online. Many other countries publish strandings results in peer-reviewed publications and use strandings data alongside research on free-ranging populations to assess threats and better inform management decisions (Tiongson et al. 2021).

Coram et al. (2021) concluded that "[l]itter interactions in the Philippines were the most frequent in the Davao region (Region XI) (n = 10)" (p. 2345) because one researcher actively uses Facebook to log strandings in his locality and to report on the necropsies that he himself conducts. The dedicated and specific use of this Facebook user's account alone introduces considerable bias in the identification of this "hotspot" that Coram et al. (2021) suggested.

The importance of local cultural and linguistic knowledge

Coram et al. (2021, p. 2359) conducted their searches only in English while "non-English language posts were translated using Google Translate". Coram et al. (2021) did not search using scripts or words of the native languages in target countries. By omitting the working languages of the countries being studied, the results were biased towards English-literate social media platform users, which resulted in significant data gaps. For example, the paper states that five (Brunei, Laos, Myanmar, Singapore, and Vietnam) of the ten Southeast Asian countries included in the study had no Facebook posts regarding litter-related strandings. However, the languages of Laos, Myanmar, and Vietnam do not use English script. Coram et al. (2021) referred to using Google Translate, which is problematic as it does not necessarily capture local colloquialisms. For example, "ikan paus'' is often used to describe "whale" in Bahasa Indonesia and Bahasa Malaysia, but the literal translation of "ikan" is fish. Similarly, the term "Cáông" is commonly used to describe "cetacean" in Vietnamese but this is not the translation provided via Google Translate. By contrast, when Southeast Asian researchers search social media for information, they are able to use the full range of languages, scripts and expressions common in their respective country of work.

To verify the results of Coram et al. (2021), we used the same keywords with our respective local scripts. Searching Facebook using Thai script yielded a link to the Facebook page for the Thai National Strandings Programme, which Coram et al. (2021) had missed entirely. The Vietnamese script search revealed at least 28 cetacean strandings, in contrast to the eight cases reported by Coram et al. The Myanmar search conducted in English and two different Burmese scripts produced 48 stranding reports from the period between 2013 and 2019, versus ten as listed by Coram et al. (2021).

Even when using English search terms in Facebook, our results are more extensive than those reported by Coram et al. (2021). For example, we found two strandings reported in Brunei Darussalam (2009–2019), which were both not included by this paper. Using the same English keywords, our Indonesian authors found the prominent 'Whale Stranding Indonesia' Facebook page (active since January 2013), which was missing entirely from Coram et al. (2021). Other Facebook pages dedicated to national strandings programmes (see Table 1

Consequently, we consider that branching out to other social media platforms in addition to Facebook and conducting searches in local scripts would have improved the original paper. In addition, ground truthing with more local scientists would have revealed stranding initiatives obscured online. For instance, although Table 2 of Coram et al. (2021) showed that Thailand and the Philippines only necropsied approximately 25% of their stranding cases, in reality, the two countries have extensive stranding networks with multi-institutional support for conducting many necropsies in Southeast Asia, surpassing those of Malaysia and Indonesia. Consequently, the authors of this commentary also consider Thailand and the Philippines as leaders in marine mammal necropsy in Southeast Asia.

Table 1 Facebook pages dedicated to reporting national strandings in countries in the Coram et al. (2021) study area and the years these pages started to be active on Facebook

Facebook name (Country)	Facebook pages that appear when we conducted the search	Active on Facebook since
Whale Stranding Indonesia (Indonesia)	https://www.facebook.com/WhaleStrandingIndonesia	2013
Marine Wildlife Watch of the Philippines (The Philippines)	https://www.facebook.com/marinewildlifewatchofthephilippines	2009
BALYENA.org (The Philippines)	https://www.facebook.com/balyena.org.ph	2011
Wildlife Rescue Unit, Sabah Malaysia (Malaysia)	https://www.facebook.com/WildlifeRescueUnit	2018
Sarawak Dolphin Project (Malaysia)	https://www.facebook.com/SarawakDolphinProject	2016
MareCet Research Organization (Malaysia)	https://www.facebook.com/marecetresearchorganization	2010

Circumstances vs. causality

Generally, being more mindful of the difference between "cause of death" and "circumstances of death" would have improved Coram et al. (2021). Cause of death in a marine mammal cannot be attributed to "ingestion of marine debris" simply because plastics were recorded in stomach contents. Ingestion of debris is a serious health concern. However, properly determining cause of death requires thorough veterinary investigation by necropsy, including gross and internal examination of all vital organs, tissue sampling and pathological examination. Plastic ingestion is not the cause of death, but may be one of the circumstances of death, in the same way that asphyxiation is the cause of death, but entanglement in fishing gear is the circumstance of death. Although an animal may have ingested plastic in one location, the plastic itself may have originated elsewhere, or the animal may have travelled from the ingestion site to the stranding site. Additionally, waste management in Southeast Asia, in practice, is often a very complex issue to manage or resolve and requires many levels of interactions between a wide range of stakeholders. As such, we find the authors' waste management recommendations could have been made more realistic by adding examples in the study area where plastic ban has been implemented (e.g., Chen et al. 2021).

Recommendations for future studies using social media as a source of data to inform conservation

While Coram et al. acknowledge some of the potential biases or shortcomings of their approach, the publication of the Coram et al. study in a prominent journal like Biodiversity and Conservation is likely to inspire others to pursue similar studies using social media to investigate trends in wildlife conservation in other regions or with other species. We feel that it is essential that anyone contemplating undertaking similar work consider the points that we raise in order to avoid drawing incomplete or misleading conclusions. These points include, inter alia:

1. The importance of ground-truthing social media posts to avoid inaccurate conclusions (e.g. the perception that Malaysia and Cambodia are the most productive countries in terms of necropsy of stranded cetaceans, when other countries have extensive networks and facilities in place).
2. The importance of including local cultural, linguistic knowledge and involving more scientists at the local level to give a broader understanding of the stranding response reality in the study area.
3. The pitfalls of possible errors in FB algorithms or original authors' own searching strategy that prevented the authors from finding other major stranding FB pages in the study area that have existed a few years before Coram et al. conducted their study.

Points 1–3 above all require the involvement of local collaborators to provide insight into local culture, customs, language and practices. Our intention with this commentary is not to chastise Coram et al. for their efforts, but rather to ensure that readers of Biodiversity and Conservation reflect on how research focusing on practices in Southeast Asia and other regions outside of Europe and the United States could benefit from a collaborative approach involving local expertise and knowledge. It is only through such collaboration

that accurate results can be achieved and that these results can be used to inform conservation strategies in the countries that are the focus of this type of work.

We also recommend a thorough re-check of the calculations and elements (e.g. synchronising tables and text). For instance, Supplementary Material mentions only four out of 40 necropsy cases were attributed to Malaysia, which would indicate that Malaysia only represents 10% of necropsy cases, instead of "the highest (40%) proportion of strandings necropsied" (p. 2345 and also Table 2). It is possible that Supplementary Material refers to just cases with litters (hence only four cases in Malaysia), but the absence of title in the Supplementary Material makes it hard to cross-examine it with Table 2. In addition, although Coram et al. (2021) said that "Malaysia had the highest proportion of strandings necropsied (40%), followed by Cambodia (33%)" (pp. 2345 and 2347), Cambodia actually holds the highest proportion of strandings necropsied (66.7%, Table 2). A thorough checking would avoid such discrepancies.

Declarations

Conflict of interest The authors have no competing interests to declare that are relevant to the content of this article.

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