



Using social media to strengthen public awareness of wildlife conservation

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ABSTRACT

While heightening public awareness through social media can enhance wildlife conservation and management efforts, the influence of media content and quality in relation to these efforts is poorly understood. In this study, online news and related public comments on the Indo-Pacific humpback dolphin (*Sousa chinensis*), one of China's flagship species, was collected and evaluated to determine the performance of media news releases in strengthening public awareness. Media releases on the incidents of dolphins straying into freshwater systems at Dongping, Beijiang, and Baisha Rivers, in the Pearl River Delta of China were examined. WeChat, the largest social networking platform in China, was used as the data source. Generalized linear model (GLM) was used to test the news popularity by publisher type, title tone, picture counts, and word counts. Content analysis (CA) was used for mining wildlife conservation information in articles and identifying public opinions. GLM results showed that three publishers (traditional, governmental and private) as well as articles with more pictures attracted greater online readerships. CA results showed that articles were unable to popularize wildlife conservation knowledge, and the public was highly doubtful about conservation efforts by the government and experts. The finding here suggests that greater attention is needed for depicting and delivering conservation knowledge (e.g., rescue methods, biological features), negative impact on wildlife by diverse human behavior, and detailed proper descriptions to promote public awareness on wildlife conservation using multi-faceted thinking so as to reduce public misunderstanding of policymakers and experts. A suggested concerted framework could help strengthen wildlife management through social media.

1. Introduction

Conserving global biodiversity is an enormous challenge, and the loss of ecological services and functions from ecosystems may adversely impact current and future generations. More than 25,000 species worldwide are currently enlisted on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of threatened species (IUCN, 2017). This dire situation necessitates measures that would promote and engage society in environmental protection activities so as to change attitudes towards our natural environment (Ehrlich and Kennedy, 2005; Lotze et al., 2011). Public awareness that touches on individual emotions, attitudes, knowledge and beliefs, is closely related with environmental conservation (Gadenne et al., 2009). Therefore, strengthening public awareness plays an increasingly important role in evoking stewardship of environmental protection and biological conservation issues (Jefferson et al., 2015; Steel et al., 2005).

Currently, both print and electronic media (e.g., book, newspaper, television, radio, etc.) have been the major sources of information on

nature; as these try to evoke our emotions and impact on our attitudes towards wildlife conservation. A previous study has indicated that different styles in presenting information can induce different responses among audience (Treisman and Gelade, 1980). While the News media portrayal of wildlife is related to public conservation awareness (Jacobson et al., 2012; Muter et al., 2013), the content of the information is sometimes unsuitable (e.g., celebrity participation in illegal nature of slow loris trade) and therefore may negatively impact on public's support for biological conservation (Nekaris et al., 2013; Thaler and Shiffman, 2015). On the other hand, good or positive content of intervention information may strengthen environmentally-favorable behavior (Brossard and Scheufele, 2013), thereby increasing the public's knowledge on biological conservation (Bombaci et al., 2015; Fauville et al., 2014; Shiffman, 2012; Minin et al., 2015).

In the era of information technology as well as personal computers and low-cost smartphones penetration, social media services and platforms (e.g., Facebook, Google+, Twitter, Flickr, QQ, WeChat, Sina Weibo) now amass more than two billion users worldwide (~29% of the world's population and ~67% of all the world's internet users)

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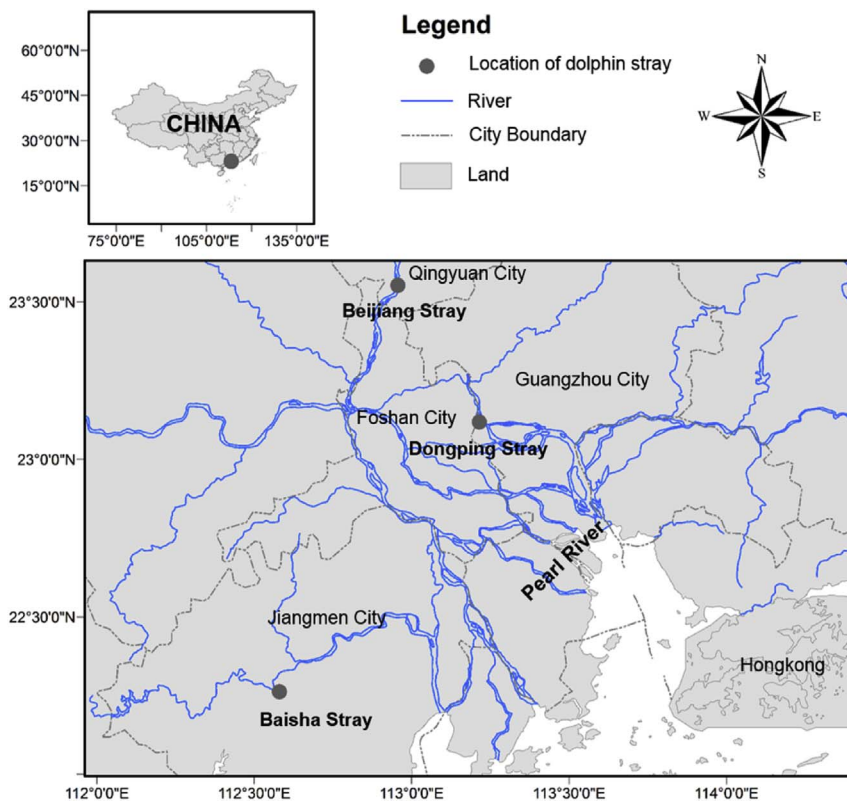


Fig. 1. Locations of the inland straying of the three Indo-Pacific humpback dolphins around the Pearl River Delta.

(Stone, 2015). These convenient social platforms are believed to have a great power in impacting on public awareness on wildlife conservation. In fact, studies have shown that even conservation science information extracted from professional conferences can be delivered to more audience via social media forums such as Twitter (Bombaci et al., 2015; Shiffman, 2012). Our search online also showed that more than 10,354 articles were found on WeChat, the largest social media platform in China (Statista, 2017), using the Chinese characters “鲸豚” (cetacean) as the keyword. As mentioned above, the News media have different types of coverage and portrayal of wildlife issues (Muter et al., 2013), which could direct the public's attitudes towards conservation. However, few studies have sought to probe the relationship between information media performances (e.g., regarding publisher, format, content, frequency of messages) and public awareness on biological conservation. One previous study (Papworth et al., 2015) was conducted along a similar objective, but was limited to only conservation research news and also covered specific audience. Therefore, the objective of this study was to use the social media platform to screen for factors which may affect the popularity of wildlife related articles and how to report on crucial contents so as to incite public opinion. We believe that such factors could help the Wildlife Management Department formulate rules that would guide publishers and media platforms on how to release information so as to strengthen public awareness of wildlife conservation.

In the present study, we chose the WeChat social media platform as the data source, and the Indo-Pacific humpback dolphin (*Sousa chinensis*) as the model wildlife for case analyses. WeChat is among the world's five most heavily used social media services, and the largest in China with about 963 million active users (Statista, 2017). Humpback dolphin is classified as a Grade 1 Protected Animal in China, and was listed as “near threatened” on the IUCN Red List in 2008 (<http://www.iucnredlist.org>). In the past 20 years, the Chinese government has intensified efforts geared at conserving this endangered species, thus, issues about this species would generally attract the attention of the social medias. Based on three series of social media (WeChat) reports on

incidents of inland river straying of the Indo-Pacific humpback dolphins (Dongping [October 12th - 28th 2015], Beijiang [March 29th - April 14th, 2016], and Baisha River [February 1st - 17th 2017] around Pearl River Estuary in China, we applied the generalized linear model (GLM) for screening out factors (i.e., publisher type, title tone, picture counts, and word counts) affecting online article popularity. We extracted content by mining for wildlife conservation related topics from articles and corresponding public opinion (e.g., attention points, attitudes, emotions) from online comments following the method by Elo and Kyngäs (2008). A suggested framework was further addressed for strengthening wildlife management through social media.

2. Materials and methods

2.1. Data collection

Data was collected through a popular Chinese search engine (Sogou, released in 2004, <http://weixin.sogou.com/>) and the WeChat official database (> 10 million as of 2015; a commonly used service and promotional platform for government, news media and companies, accessed by about 80% of WeChat users) (Tencent, 2015). The Pearl River Estuary is one of the most important habitats for Indo-Pacific humpback dolphins (Jefferson and Smith, 2015) with two nature reserves (the Indo-Pacific Humpback Dolphin National Nature Reserve in the Pearl River Estuary [Zhuhai City] and Indo-Pacific Humpback Dolphin Provincial Nature Reserve in Jiangmen City). Therefore, the scope of information gathered was centered in cities around the Pearl River Delta. To improve the efficiency of data collection, face-to-face interviews (four oral interviews, two from Jiangmen and two from Zhuhai) were conducted with technicians from the two nature reserves, to identify the news items that most influenced the publics during 2015–2017. Finally, three incidents of freshwater straying of Indo-Pacific humpback dolphin (Dongping, Beijiang, and Baisha Rivers) were chosen for case study (Fig. 1). In view of the fact that news reports typically mention the issue/incident role (who), place (where), and content (what) of the

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