Ocean and Coastal Management 158 (2018) 154–163

Contents lists available at ScienceDirect

Ocean and Coastal Management

journal homepage: www.elsevier.com/locate/ocecoaman

Competing and conflicting messages via online news media: Potential impacts of claims that the Great Barrier Reef is dying

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ARTICLE INFO

Keywords:
News media
Media impact
Great Barrier Reef
Public perceptions

ABSTRACT

Coverage of issues by news media is known to impact on both public perceptions and policy development aimed at addressing the featured issues. We examine the potential impact of news media coverage regarding the health and potential future of the World heritage-listed Great Barrier Reef, which is under multiple pressures, both natural and anthropogenic. We draw on the extant literature regarding the impact of news media coverage of other complex issues, linking to relevant, albeit limited theoretical concepts that have been applied to previous media studies. We find that media coverage is predominately sensationalized and negative, with the potential to reinforce perceptions that mitigation attempts will be ineffective and thus likely to inhibit future policy development. We discuss the need for a review of existing science communication models and strategies to reduce the knowledge-practice gap between scientists and policy makers, together with proactive strategies to counter negative news coverage.

1. Introduction

The impact of mass media coverage on public attitudes and beliefs regarding complex issues such as environmental protection and climate change impacts and on policy development is well documented (Anderson, 2009; Schmidt et al., 2013; Van Aelst and Walgrave, 2011). We use the example of Australia's Great Barrier Reef (GBR), an iconic natural resource under pressure from a range of natural (e.g., cyclones, floods, natural disasters including coral bleaching events etc.) and anthropogenic factors (e.g., pollution, population growth, deforestation etc.) factors, to discuss the impact of media coverage on attempts to improve water quality on the reef and thus protect the reef itself and a range of marine wildlife. We use content analysis underpinned by common media theories to analyse the mass media coverage of the health of the GBR across one calendar year and discuss the implications for policy makers and for natural resource management bodies.

2. Materials and methods

We have followed the strategy outlined in McLennan et al.'s (2014) analysis of media representation of issues, noting the decline in traditional print-based newspaper readership and the increased use of electronic media forms (Haddock-Fraser, 2012). Thus we have restricted our analysis to online news articles, press releases and blogs. We acknowledge that a small number of articles are available on subscription only, and note McLennan et al.'s observation that "*audio or televised news may be under-represented. However, with many news-providers now publishing transcriptions of their in-print, audio or televised news online, this was not considered to overly bias the data" (2014).*

Further, the focus on internet-based material is also justified in that it captures small local media as well as larger metropolitan and regional media and is seen as providing a "*more level playing field*' than conventional media (Gavin, 2010), presenting "*communication opportunities not available in the mainstream media"* including for those with perceptions and views at odds with prevailing views (Stein, 2009), offering the ability to reach a global audience at minimal cost (Barr et al., 2011; Douglas and Sutton, 2004).

Following the McLennan et al.'s (2014) strategy of using the Google News search function (https://news.google.com.au/), we searched for all news items relating to the Great Barrier Reef during 2016. In total 242 articles were identified, including news media, blogs and online press releases from government agencies or organizations or from lobby groups. These were then reviewed to determine which articles were relevant to this study.

Inclusion criteria:

The following criteria was included to ensure that all relevant material was captured in the data search.

- Any topic dealing with the current or projected future state of the GBR, water quality issues, impact of natural events such as climate

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https://doi.org/10.1016/j.ocecoaman.2018.03.037
Received 26 September 2017; Received in revised form 26 February 2018; Accepted 26 March 2018
Available online 31 March 2018
0964-5691/

change or anthropogenic influences such as agricultural runoff and the impact of industry on the GBR.

Exclusion criteria:

The following criteria was excluded to exclude non-relevant information:

- Articles not in English: articles not in English were excluded due to time constraints of having the material interpreted from the foreign language to English and back again to ensure that the translation was accurate.
- Articles requiring subscription/purchase. Two media outlets, The Courier Mail and Cairns Post newspapers were excluded (8 articles in total, all of which carried headlines similar to those in freely available outlets at the same point in time).
- Articles relating to snorkelling/diving deaths or boating incidents on the GBR as these were not related to the scope of the study i.e. water quality issues, impact of natural events such as climate change or anthropogenic influences.
- Articles directly or indirectly promoting tourism or detailing changes to infrastructure such as transport as these were not related to the scope of the study i.e. water quality issues, impact of natural events such as climate change or anthropogenic influences.
- Articles relating to medical breakthroughs using fish venom as these were not related to the scope of the study i.e. water quality issues, impact of natural events such as climate change or anthropogenic influences.
- Government or environmental activist website content as these sites tended to display extreme views of the topic in the article.

2.1. Coding strategy

The articles selected for detailed analysis were initially coded into key issues and then re-coded inductively to identify the media frames being used, noting potential distorting factors such as government elections and the submission dates of reports to international bodies such as UNESCO. In addition, a specific author category was set up to distinguish material from that of journalists or other sources to Academics who frequently contribute to *The Conversation* (an independent source of news and views, sourced from the academic and research community and delivered direct to the public) and occasionally in other media.

We have used the accepted benchmark measures for inter-coder reliability (the extent to which two or more independent coders agree on the coding of the content of interest with an application of the same coding scheme) of .90 being acceptable in all situations and .80 being acceptable in most situations (Lombard et al., 2002). Initial discussions were held regarding the coding strategy and trial coding conducted. One author then completed coding of all articles, with a second author then recoding the material, resulting in 100% agreement on all coding decisions.

2.2. Relevant theory

While there are several media theories commonly cited in the literature (see, for example, McLennan et al., 2014; Walters et al., 2016), these are descriptive rather than offering predictive capacity and have not been empirically tested. Accepting these limitations, we have drawn on the most commonly cited of these theories in the analysis reported in the following sections.

Agenda Setting Theory: decisions regarding what to display as news and how, in order to influence both public opinion and policy makers (e.g. the GBR being dead or dying).

Media Framing Theory (also referred to as second-order agenda setting): decisions regarding what specific parts of an issue should be highlighted in order to give a specific interpretation. This is closely linked to issues of sensationalism and media hype, discussed earlier, where the reporting of an issue may be exaggerated or distorted.

Valance framing: decisions regarding whether to portray issues in either positive or negative terms.

Hedging framing: where claims are phrased as tentative, e.g. "might".

Adversarial framing: where conflict between opposing groups is highlighted without reference to the level of agreement across all stakeholders.

(McLennan et al., 2014; Scheufele, 1999; Scheufele and Tewksbury, 2007; Walters et al., 2016).

2.3. News media influence and impacts

In spite of the growth of purely digital options, mass media, via either digital or traditional formats, continues to be the primary source of information for the majority of people (Schmidt et al., 2013). There is strong evidence that these media are a substantial influence on public perceptions of specific issues and on policy development (Anderson, 2009; Boykoff and Yulsman, 2013; Happer and Philo, 2016), both reflecting and shaping public opinions (Leitch and Bohensky, 2014). Its influence raises concerns regarding the potential for misinformation to be widely disseminated or for erroneous perceptions on specific issues to be reinforced (Lewandowsky et al., 2012). As has been found in relation to complex issues such as climate change, the media frame issues in terms of extremes, either using conflicting views or potential outcomes (Wojcik et al., 2014).

2.4. False balance

In terms of reporting of conflicting views, the news media frequently gives equal coverage, irrespective of the amount or quality of evidence presented or whether some views come from a small number of people, to both sides of debate where there are divergent views (Boykoff and Boykoff, 2004; Gross, 2009; Lewandowsky et al., 2012). While this 'objectivity' in being seen to present all views is claimed to be a basic principle of journalism (Clarke, 2008), this false balance can cause intentional or unintentional bias, magnifying the perceived levels of agreement or disagreement (Boykoff and Mansfield, 2008; Finnis et al., 2015). In particular, by not stating what the relative strength of evidence offered by different parties is, perceptions may be created or maintained that there is a lack of consensus on particular issues (Clarke et al., 2015). The journalist code of ethics regarding not suppressing "*relevant available facts or distorting emphasis*" (Hurlimann and Dolnicar, 2012) would appear to be not adhered to when emphasis is unduly distorted.

In addition, while stories of conflict or disagreement may stimulate attention and interest, they have been shown to decrease confidence in scientific evidence (Jensen and Hurley, 2012; Stocking and Holstein, 2008). However, while criticism of journalism practices is widespread, a failure to provide solutions that are achievable within available resources is noted (Secko et al., 2013). Further, uncertainty and doubt may be magnified, misrepresented or manipulated (Bailey et al., 2014), particularly by providing a "*forum for contrarian views*" (Brüggemann and Engesser, 2017).

2.5. Reporting of disagreement

An example of reporting disagreement is found in the 2016 media coverage of public disagreement by a scientist. The reports in the media from a large group of other experts regarding the extent and consequences of coral bleaching, appeared under headlines such as "*Great barrier battleground over coral bleaching*" (see, for example, the June 24 item: http://www.theaustralian.com.au/news/inquirer/great-barrier-battleground-over-coral-bleaching/news-story/e74d24eee3c4a01400e91ec7cefa5258). When similar controversies