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Source: Tropical Conservation Science, 5(2) : 142-149

Published By: SAGE Publishing

URL: <https://doi.org/10.1177/194008291200500204>

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Opinion Article

Misinformation and omission in science journalism

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Abstract

On 7 February 2012, one of the largest whale sharks ever recorded was found presumably dead and towed to Karachi harbour. On 8 February, 'whale shark' was the third most searched keyword as shown on Google Trends. Reports on landmark events such as this could educate the public on marine conservation issues. We collated 45 internet news reports and examined whether or not reports a) are scientifically accurate for information on the species in question and b) educate readers on specific or broad biology or conservation issues. We found only 46.6% of the reports to be factually accurate. Only a minority of the reports discussed conservation of whale sharks. Scientists should step-up public communications as a meaningful educational exercise in light of overwhelming public interest in such events.

Keywords: scientific journalism, reporting accuracy, whale shark

Resumen

El 7 de febrero de 2012, uno de los tiburones ballena más grande jamás registrado fue encontrado supuestamente muerto y remolcado hasta el puerto de Karachi. El 8 de febrero, "tiburón ballena" fue la palabra clave tercero más buscado, como se muestra en Google Trends. Los informes sobre los eventos históricos como éste, pueden ayudar a educar al público sobre temas de conservación marina. Hemos recopilado 45 informes de noticias de Internet y se examina si los informes a) son científicamente exactos para obtener información sobre las especies en cuestión, y b) educar a los lectores sobre la biología específica o general o temas de conservación. Se encontró que sólo el 46,6% de los informes resultaron ser objetivamente exacta. Sólo una minoría de los informes discute la conservación de los tiburones ballena. Los científicos deberían paso a las comunicaciones públicas como un ejercicio de sentido educativo a la luz de un interés público en tales acontecimientos.

Palabras clave: periodismo científico, precisión en reportajes, tiburón ballena

Received: 3 May 2012; Accepted: 17 May 2012; Published: 9 July 2012.

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Cite this paper as: Jaafar, Z. and Giam, X. 2012 Misinformation and omission in science journalism. *Tropical Conservation Science* Vol. 5(2):142-149 Available online: www.tropicalconservationscience.org

Introduction

On 7 February 2012, an 11 m long, 14.5 ton whale shark (*Rhincodon typus*) – one of the largest fish ever recorded - was found presumably dead in the Arabian Sea and towed to Karachi harbour. Reports were swiftly filed by the press worldwide, and many were re-posted on blogs and social media. On 8 February, 'whale shark' was the third most searched keyword as shown on Google Trends. Reports on landmark events such as this can help educate the public on marine conservation and the ecology of whale sharks.

Methods

We collated 45 internet news reports by entering the search term "news + whale shark + Karachi" on Google (www.google.com) on 12 February 2012. We targeted news reports that were available online, as these were the ones which were used as links when the news was shared on the various social media platforms. Twenty-five of these reports were obtained from national or international newspapers with print editions, twelve from internet newspapers, six from TV broadcasters, and two from news agencies (Supplementary Table 1).

We examined whether or not the reports a) are scientifically accurate for information on the species in question and b) educate readers on specific or broad biology or conservation issues. Factually accurate information on whale sharks was extracted from IUCN (www.iucnredlist.org), and Food and Agriculture Organization (www.fao.org). We did not examine the accuracy of claims that are non-scientific or non-verifiable, such as information about the price at which the specimen was sold, the cause of death, and the weight and length of the fish.

Results

We found that only 21 out of the 45 reports (46.6%) were factually accurate. Misinformation included statements that the whale shark is a mammal and that it is found in deep, temperate seas. Fewer than half of the reports (44.4%) included that the whale shark is the largest extant fish species.

Only a minority of the reports discussed conservation of whale sharks. Twenty-two articles (48.9%) reported that the species is threatened, but only six (13.3%) discussed causes of the species decline. Although 11 reports (24.4%) made referrals to the IUCN categorisation, only seven reports (15.6%) correctly cited the species as 'vulnerable.' Two reports (4.4%) correctly stated that the whale shark is CITES-listed but incorrectly concluded that its capture is therefore restricted. While 10 reports (22.2%) linked additional information, only three (6.7%) hyperlinks were relevant. Additionally, only two reports solicited comments from scientists researching whale sharks or sharks in general.

Besides demonstrating that most of the reports were compromised by misinformation and by lack of discussion on conservation issues, we tested whether reports originating from traditional media (newspapers with print editions, TV broadcasters and news agencies) are more or less likely to be factually accurate compared to new media (online news-sites). We found no statistical relationship between type of media (traditional versus new) and the likelihood of a report being factually accurate ($\chi^2=0.164$, Monte Carlo $P = 0.74$) (Fig. 1)

While anthropomorphism is not unexpected — 53.3% of reports used terms like “gentle giant” and “deep-sea monster”—11 reports mentioned that whale sharks allow humans to “hitch a ride” on their backs, a practice frowned upon by scientists and conservationists owing to its unknown impact on the animal and to ethical concerns [1,2].

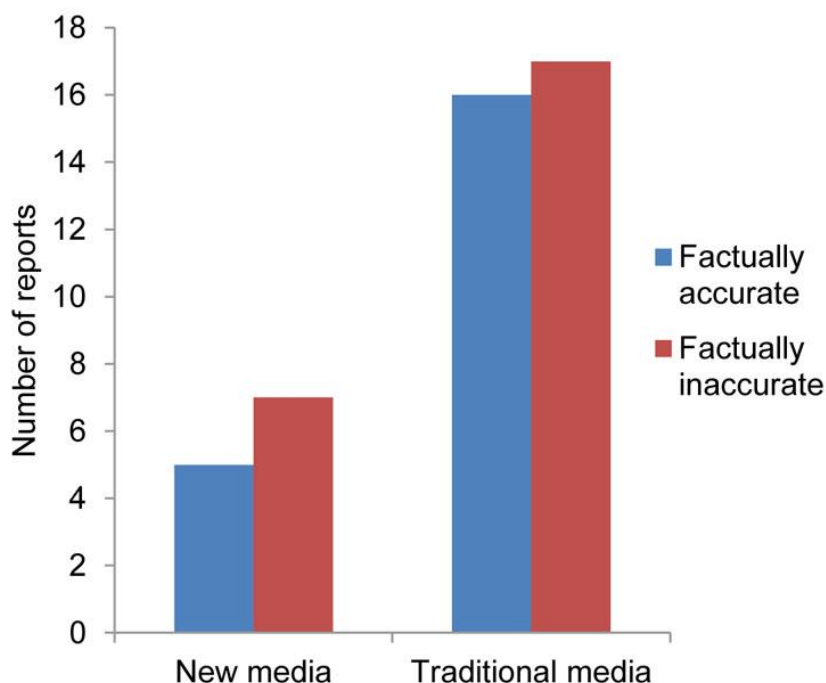


Fig. 1. The number of factually accurate and inaccurate reports originating from new and traditional media.

Implications for Conservation

The media can play an important role in educating the public on conservation issues. However, both misinformation and omission of information may compromise its effectiveness. Scientists can take proactive roles in communicating corrections to misinformation in published articles. It would be ideal, however, if journalists were to consult scientific literature, scientifically-accurate repositories of information, or scientists to ensure accuracy prior to the publication of reports and articles. Scientists in turn, must not shun such consultations, as the media is an available tool to engage and educate the general public [3]. Unfortunately, as the race to publish (if not perish) for scientists intensifies [4], few may be willing to invest additional time to draft communications to the media and public. We encourage universities and funding agencies to consider the track record of scientists in scientific education and communication to the public in evaluation exercises.

Further, collaborative efforts between scientists and journalists can pave the way for responsible reporting. A program initiating such efforts was started in 2003 by the Association des Journalistes Scientifiques de la Presse d'Information (Association of Scientific Journalists in the Informative Press, AJSPI). Integration between the two parties is carried out through exchange programs; journalists spend one week in the laboratory with the scientists and conversely, scientists spend one week in the press room with the journalists [5]. Efforts such these are beneficial to both

parties and can foster greater appreciation and understanding of their respective career requirements.

Judging from overwhelming public interest on organisms such as the whale shark, and the growing awareness of anthropogenic global change, the time is ripe for scientists to increase public communications for conservation.

Acknowledgements

We wish to thank the two anonymous reviewers for their comments that helped improve this manuscript.

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Supplementary Table 1. Data matrix for 45 analysed article. TYPE: Type of media; FA: article is factually accurate (1), article is factually inaccurate (0); LH: life-history of species reported (1), not reported (0); THR: mentioned species is threatened (1), did not mention species is threatened (0); DEC: discussed threats/causes of species decline (1); did not discuss (0); IUCN: reported IUCN status (1), did not report (0); CITE: reported CITES status (1), did not report (0); ANT: article included anthropomorphic references to species (1), did not include (0); HIT: article reported humans to hitch a ride on/swim with whales (1), did not report (0).

NO	AGENCY	TYPE	FA	LH	THR	DEC	IUCN	CITES	ANT	HIT	LINK	WEBSITE
1	Washington Post	Print	1	0	1	1	1 (VU)	0	1	1	1 (shark fins photos)	http://www.washingtonpost.com/blogs/blogpost/post/whale-shark-40-foot-long-threatened-animal-hauled-onto-pakistani-pier/2012/02/08/gIQAASooyQ_blog.html?tid=pm_national_pop
2	Christian Science Monitor	Print	0	1	0	0	0	0	1	0	1 (weird fishes of the world - not relevant)	http://www.csmonitor.com/Science/2012/0208/Huge-whale-shark-sold-for-2-200-in-Pakistan
3	The Dawn	Print	1	1	1	0	1 (VU)	1	1	0	0	http://www.dawn.com/2012/02/08/7000-kilo-36-foot-long-whale-shark-carcass-brought-to-city-harbour.html
4	Nigerian Tribune	Print	0	0	0	0	0	0	1	0	0	http://tribune.com.ng/index.php/news/35744-giant-whale-shark-washed-ashore-in-pakistan
5	News Pakistan	Print	0	0	1	0	0	0	0	0	1 ('related news' - not relevant at all)	http://www.newspakistan.pk/2012/02/08/Giant-Whale-Shark-washes-ashore-at-Karachi-Harbour-triggering-panic-in-local-population/
6	The Express Tribune, with the International Herald Tribune II	Print	0	0	0	0	0	0	0	0	1 (earlier published stories)	http://tribune.com.pk/story/333196/all-is-whale-moby-dick-comes-to-town-ahead-of-karachi-literature-festival/
7	Russia Today	TV broadcaster	0	1	0	0	0	0	0	0	0	http://rt.com/news/giant-shark-pakistan-video-799/
8	Slate Magazine	Internet news-site	0	1	1	0	0	0	0	0	0	http://www.slate.com/blogs/trending/2012/02/08/huge_whale_shark_may_have_died_in_fishing_nets.html
9	Mercury News Silicon Valley	Print	1	1	0	0	0	0	0	0	0	http://www.mercurynews.com/nation-world/ci_19918799

10	Los Angeles Times	Print	1	1	1	0	0	0	1	1	0	http://latimesblogs.latimes.com/world_now/2012/02/whale-shark.html
11	Fox News Latino	Print	1	0	1	0	0	1	1	0	0	http://latino.foxnews.com/latino/news/2012/02/08/whale-shark-caught-by-fishermen-was-36-feet-long-and-weighed-15-tons/
12	The International News Karachi	Print	0	0	1	0	0	0	1	0	0	http://www.thenews.com.pk/article-34537-Khi:-Whale-shark,-biggest-catch-so-far
13	CBS News	Print	1	0	1	0	1 (VU)	0	1	1	1 (whale shark video by National Geographic)	http://www.cbsnews.com/8301-503543_162-57372838-503543/pakistani-fishermen-reel-in-40-foot-whale-shark/
14	Merco Press, South Atlantic News Agency	News agency	0	1	1	0	1 ("Endangered")	0	1	1	0	http://en.mercopress.com/2012/02/08/eight-ton-whale-shark-hauled-out-of-the-water-largest-catch
15	BBC	TV broadcaster	1	0	1	0	1 (VU)	0	0	0	0	http://www.bbc.co.uk/news/world-asia-16940149
16	Alaska Dispatch	Print	1	1	0	0	0	0	0	0	0	http://www.alaskadispatch.com/article/77-ton-whale-shark-fetches-2200-pakistan
17	Daily Gossip	Internet news-site	1	0	1	1	1 (unclear)	0	1	0	0	http://www.dailygossip.org/dead-40-foot-whale-shark-sold-in-pakistan-for-18-750-2456
18	Herald Sun Australia	Print	0	1	0	0	0	0	1	1	0	http://www.heraldsun.com.au/lifestyle/the-other-side/cranes-lift-monster-whale-shark-in-karachi-pakistan/story-e6frfhk6-1226265405730
19	The Telegraph	Print	0	1	1	0	0	0	0	0	1 (related stories on whale shark)	http://www.telegraph.co.uk/news/newstopics/howaboutthat/9069235/Pakistan-fishermen-reel-in-giant-whale-shark.html
20	Care2	Internet news-site	0	1	1	0	1 ("Indeterminate")	0	1	0	1 (Petition and Tuna Fishing Threats)	http://www.care2.com/greenliving/7-ton-whale-shark-emerges-from-sea.html
21	IBN India	TV broadcaster	1	1	0	0	0	0	1	0	0	http://ibnlive.in.com/news/pak-fishermen-catch-giant-7000-kg-whale-shark/228432-56.html
22	New Jersey Newsroom	Internet news-	1	0	1	0	0	0	1	1	0	http://www.newjerseynewsroom.com/science-updates/40-foot-whale-shark-found-dead-off-the-coast-of-pakistan

site

23	NDTV New Delhi Television	TV broadcaster	1	1	0	0	0	0	1	1	0	http://www.ndtv.com/article/world/pak-fishermen-catch-giant-7000-kg-whale-shark-174477
24	Allvoices - Citizen Journalism	Internet news-site	1	1	0	0	0	0	0	0	0	http://www.allvoices.com/contributed-news/11468242-giant-whale-shark-found-dead-in-karachi-pakistan
25	Daily Mail	Print	1	1	0	0	0	0	1	1	0	http://www.dailymail.co.uk/news/article-2097822/It-THIS-big-Fishermen-Arabian-Sea-reel-giant-40ft-long-whale-shark.html#ixzz1ljgtsAH3
26	Live Science	Internet news-site	0	1	1	1	1 (VU)	0	0	0	0	http://www.livescience.com/18376-pakistan-whale-shark.html
27	Stuff New Zealand	Internet news-site	1	0	1	0	0	0	0	0	0	http://www.stuff.co.nz/world/asia/6384381/Whopper-whale-shark-washes-up
28	Pakistan Today	Print	1	1	0	0	0	0	0	0	0	http://www.pakistantoday.com.pk/2012/02/whale-shark-%E2%80%98a-piece-of-history%E2%80%99/
29	Gulf News	Print	1	0	0	0	0	0	1	0	0	http://gulfnews.com/news/world/pakistan/whale-shark-shocks-fishing-crew-1.978539
30	The Star USA	Print	0	1	0	0	0	0	1	0	0	http://www.thestar.com/news/world/article/1128564--pakistanian-wages-cat-and-mouse-battle-with-police-over-giant-whale-shark?bn=1
31	Pravda Russia	Internet news-site	0	1	0	0	0	0	1	1	0	http://english.pravda.ru/science/earth/10-02-2012/120471-6_tonne_whale_shark_found_dead-0/
32	Radar Online	Internet news-site	0	1	1	1	1 (unclear)	0	0	0	0	http://www.radaronline.com/exclusives/2012/02/whale-shark-40-foot-photos-pakistanian-fishermen
33	International Business Times US Edition	Print	1	1	0	0	0	0	0	0	0	http://www.ibtimes.com/articles/295159/20120208/whale-shark-hybrid-creatures-largest-fish.htm
34	Long Island Press	Print	0	0	1	1	0	0	1	0	0	http://www.longislandpress.com/2012/02/07/whale-shark-found-dead-in-pakistan-video/

35	ABC News	TV broadca ster	0	1	0	0	0	0	0	0	0	http://abcnews.go.com/blogs/headlines/2012/02/giant-whale-shark-reeled-in-by-pakistani-fisherman/
36	NBC Sports OffDesk	TV broadca ster	0	1	0	0	0	0	0	0	0	http://offthebench.nbcsports.com/2012/02/08/forty-foot-whale-shark-will-not-fit-in-mans-freezer-im-guessing/
37	Huffington Post	Internet news- site	1	1	1	1	1 (VU)	0	0	0	0	http://www.huffingtonpost.com/2012/02/07/whale-shark-arabian-sea-karachi-pakistan_n_1260388.html
38	Hispanic Business	Print	1	1	0	0	0	0	1	0	1 ('related news' - but not really related/relevant at all)	http://www.hispanicbusiness.com/2012/2/8/huge_whale_shark_caught_in_arabian.htm
39	Sydney Morning Herald	Print	0	0	1	0	0	0	0	0	1 ('related news' - but not really related/relevant at all)	http://www.smh.com.au/environment/conservation/seventonne-fish-pulled-from-water-20120208-1razs.html
40	Newser	Internet news- site	0	0	0	0	0	0	0	0	0	http://www.newser.com/story/139262/big-catch-in-pakistan-giant-whale-shark.html
41	New York Daily	Print	0	0	1	0	1 ("Endangere d")	0	0	0	1 ('related news' - but not really related/relevant at all)	http://www.nydailynews.com/news/world/fishermen-pakistan-reel-massive-40-foot-whale-shark-sell-18-750-article-1.1018907
42	The Telegraph Australia	Print	1	1	0	0	0	0	1	1	0	http://www.dailytelegraph.com.au/news/world/cranes-lift-monster-whale-shark-in-karachi-pakistan/story-e6frev00-1226265651245
43	Atlantic Wire	Print	0	0	0	0	0	0	1	0	0	http://www.theatlanticwire.com/global/2012/02/massive-40-foot-shark-pulled-arabian-sea/48438/
44	UPI	News agency	0	0	0	0	0	0	0	0	0	http://www.upi.com/Odd_News/2012/02/08/Giant-whale-shark-washes-up-in-Pakistan/UPI-36171328744183/#ixzz1mnhkVgIL
45	Newsbeats India	Internet news- site	0	1	1	0	0	0	1	1	0	http://www.newsbeats.in/news/giant-whale-shark-40-feet-washes-up-in-pakistan/