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Do Natural History Documentaries Prompt Public Engagement?

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Abstract

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Introduction

We live in the Anthropocene age, a critical time for the planet and the species who inhabit it. The effect humanity has on the natural world cannot be overstated given our culpability in causing the so-called the Anthropocene mass extinction event, the worst loss of biodiversity since the dinosaurs perished 65 MYA [1]. We also live in digital age, a time of constant technological change, instant rewards and short attention spans. Conservation practitioners are thus faced with the task of alerting the public to the plight of the planet and its many endangered species in a way that is as palatable as it is arresting.

Nature documentaries have recently shown their potential to fill this role, with viewing figures at record levels. These numbers show there is certainly an appeitite among the public for nature. But we wonder whether this medium gets the message of conservation across, or if it is lost along the way. And if so, where does that loss occur, so that we may rectify it.

Documentaries readily encounter the dilemma of education versus entertainment which blurs into edutainment [2]. A show that becomes too preachy or didactic is sure to lose its audience and, as a consequence, any message it's trying to convey. Sir David Attenborough, perhaps the most venerable figure in the history of nature documentary broadcasting, is well aware of this difficulty. In an interview he gave in the 1980s [3] around the time of The Living Planet he argued, "As a conservationist, I think I would be doing the cause a great disservice if I tacked on to the end of every single

programme that I did, a little homily to explain yet again that mankind is wrecking the environment that I have been showing." Rather, his approach has been to showcase the beauty and wonder of the natural world so that the audience will come to appreciate the intrinsic merit of nature and then take some responsibility for its preservation. Any explicit mentions of conservation issues tend to be restricted to a single episode of a documentary run instead of being interspersed throughout [4]. This has been a feature of most of his output with the BBC Natural History Unit over the past 40 years. In terms of viewership, his philosophy has been unarguably successful; the latest major broadcast, Planet Earth 2, commanded an audience of around 12 million people per episode in the UK, the highest ever audience for a nature documentary.

But Sir David's approach has been criticised by commentators who argue the picture painted in his shows is a totally, unrealistic view of the natural world, and further, that it is disingenuous to talk about the marvels of a critically endangered species without a mention of its perilous state [5]. This was best captured by the Guardian journalist George Monbiot, who said, "There are two planet earths. One of them is the complex, morally challenging world in which we live, threatened by ecological collapse. The other is the one we see on the wildlife programmes." Indeed, many of the species featured in his shows are in danger of extinction and any campaign to reverse their decline is likely to be time sensitive [6, 7].

In this work, we wanted to put Sir David's philosophy to the test by assessing how the public respond to his shows in terms of further engagement with nature and

matters of conservation. Specifically, we looked to internet-based methods in the form of data from Twitter and Wikipedia to gauge public engagement during the broadcast run of Planet Earth 2 [8]. These methods have proven their worth with respect to the public uptake of species-specific conservation campaigns in the UK [8]. Twitter was chosen to get an understanding of people's instant reactions to the show whereas we used Wikipedia to determine whether people were interested in learning more about the featured species.

Materials and Methods

We first searched the scripts from the six episodes of Planet Earth 2 for sentences that could be construed as having a conservation theme. This was done indepedently to ensure intercoder reliability. The few discrepanices that resulted were discussed so that we could set out a final set of sentences (See supplementary for script sections). We did this to determine if the script of Planet Earth 2 adhered to Sir David's philosophy described earlier. We then compiled a list of all of the species that were mentioned in the script and assigned each their status on the IUCN Red List.

We then searched Twitter during the hour each episode was aired and the hour afterwards. We sampled XXX tweets per episode and counted the number mentions of the species that were featured.

Next, we used the R package *pageviews* to find the daily number of hits the Wikipedia article for each species featured on Planet Earth 2 received over the course of

2016. We searched for the name of the species as it was stated in the script. Our prediction was that the articles for the species featured on the show would see a spike around the air dates relative to the rest of the year. We were able to distinguish the page hits according to whether they came from mobile phone or a desktop search. This enabled us to make the prediciton that more anomalies would be seen from mobile data due to the ubiquity of smart phones and increase in 'dual screening' - watching television whilst using your phone [9].

We used the R package *AnomalyDetection* to pick out anomalies in the detrended time series data we collated from Wikipedia article hits. We looked at two different senstivities, at 1% and 2%. A 1% sensitivity meant there could be a maximum of 3 anomalous days of hits for an article because it is based on a sample of 365 days, at 2% there are a maximum of 7 possible days. Of course, there can be fewer extremes or even none. We counted the number of times an article's anomalous day occurred either during the day of broadcast or the day after broadcast of an episode of Planet Earth 2 at both sensitivty levels. We recorded mobile access to the site, desktop access and a combination of the two. We also ran the same analysis using the USA airdates for the show but from January to April 2017.

Results

In total we analysed 93 distinct animals that featured in the script of Planet Earth 2 over the six episodes. In addition, five species featured in two separate episodes, indri, giant

otter, lion, termite and peregrine falcon, giving a total of 98 animal species. As expected there were few explicit discussions of conservation across the series. Notably, the IUCN status of the featured animals was never mentioned.

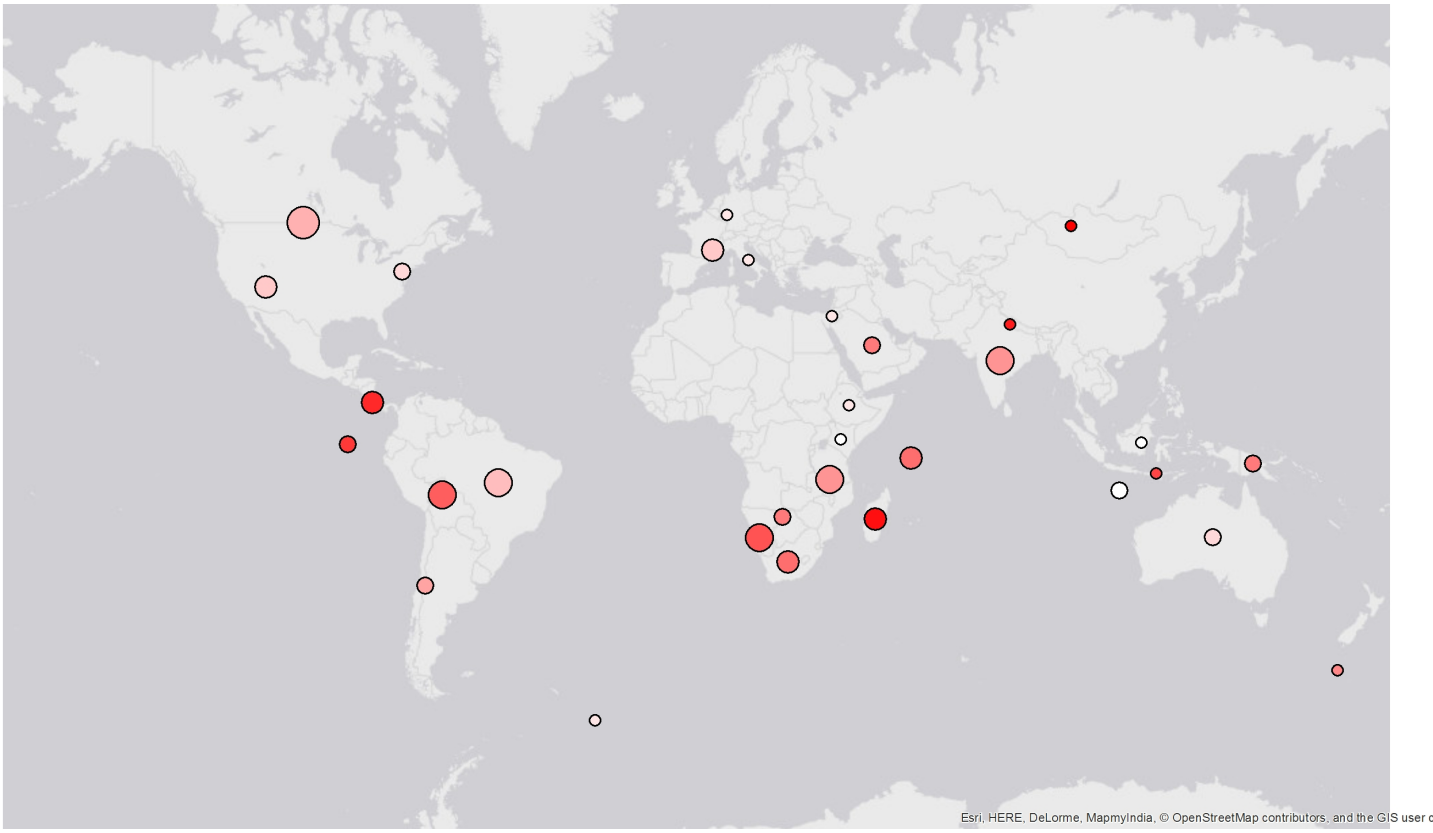

Figure 1: Average IUCN status of species featured on Planet Earth 2

Discussion

Ethics statement

N/A

Country	Sensitivity	Access	Percentage of anomalies
UK	1%	Mobile	54
UK	1%	Desktop	34
UK	1%	Combined	45
UK	2%	Mobile	65
UK	2%	Desktop	44
UK	2%	Combined	57
USA	1%	Mobile	27
USA	1%	Desktop	10
USA	1%	Combined	22
USA	2%	Mobile	37
USA	2%	Desktop	17
USA	2%	Combined	30

Data accessibility statement

All data and analysis code is available on GitHub (`https://github.com/kanead`).

Authors' Contributions

All authors approved the final version of the manuscript.

Competing Interests

We have no competing interests.

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