Do Species Receive More Attention When Named After Celebrities?

Abstract

Celebrities can draw attention to brands, and rebranding species' names could improve public interest in them. Using a large-scale examination of real-world behavioral data, we assessed whether species across six taxonomic groups receive more attention on Wikipedia when named after celebrities than when not. We conducted our analysis for four increasingly strict thresholds of how many average daily Wikipedia views define a celebrity (1, 10, 100, and 1000). Overall, we found a high probability (0.96–0.98) that celebrity species had more page views than their respective control species irrespective of the celebrity threshold. The multiplicative effect on species page views was larger but more uncertain with increasing celebrity page-view thresholds, and ranged from 1.08 (1.00–1.18 95% credible interval [CI]) for a celebrity threshold of 1 view to 1.76 (0.96–2.80 95% CI) for a celebrity threshold of 1000. The hierarchical estimates for the various taxa tended to be positive; the strongest effects showed to be for invertebrates (followed by amphibians, reptiles, fish, and mammals), whilst the weakest effect was for birds at lower page-view thresholds defining a celebrity. Our results suggest that naming species after celebrities could be particularly beneficial for those belonging to taxonomic groups that are generally less popular than others (e.g., invertebrates). Overall, these findings provide a novel contribution to the literature on rebranding species' names. We discuss how celebrity attributes may influence the effectiveness of this marketing strategy. Finally, we encourage conservationists to examine how naming threatened species after celebrities may drive conservation support, especially for species that are otherwise typically overlooked by the public.

Introduction

There is often the expectation that conservation action be driven by differences in the population size, ecological role, geographic distribution, and evolutionary distinctness of species (Vane-Wright et al., 1991; Faith, 1992; Mills et al., 1993). Yet, species also differ in how they are perceived by people (and therefore how much attention they receive; Roll et al., 2016). For example, preservation of species who are less likely to exhibit aesthetically preferred traits (such as being large, colorful, with forward-facing eyes; Smith et al., 2012; Macdonald et al., 2015) has generally been less valued and received less interest, funding, support, and coverage by the public and conservation organizations than the protection of birds and mammals (Czech et al., 2001; Clucas et al., 2008; Martín-López et al., 2009; Skibins et al., 2017). Since endangered species do not always possess such traits (Colléony et al., 2017), it is vital to consider strategies that enhance species' popularity, regardless of their appearance.

Increasing public interest and engagement with species can be achieved through effective ‘conservation marketing’ (Veríssimo et al., 2017), the application of marketing techniques to influence the attitudes, perceptions, and behaviors of individuals and societies, for the benefit of conservation (Wright et al., 2015). Specifically, it has been suggested that techniques such as branding (the process of creating names or symbols to make a product distinguishable from its competitors, regardless of its aesthetics; Kotler et al., 2005) could enhance the visibility of species. This strategy could particularly benefit species who would otherwise be less popular (Díaz-Restrepo et al., 2022), and warrants further study (Wright et al., 2015). Particularly, more behavioral data is needed to understand the successful use of conservation marketing (Veríssimo et al., 2017). For example, Karaffa et al. (2012) found that species with positive, rather than negative, sounding names received more conservation support, but these findings were based only on the attitudes of a small student sample. Additionally, even though Díaz-Restrepo et al. (2022) and Blades (2020) found that species’ names did not significantly influence conservation support for them, these studies focused on mammals (whose favorable aesthetics may have overshadowed the influence of naming). Thus, it should be explored whether these null results remain constant across other taxonomic groups.

Because visibility and recognition are key factors for driving brand awareness (Veríssimo et al., 2014a), perhaps conservationists should consider whether species can draw more attention if they are named after celebrities. To date, there is a lack of exploration into whether the effects of using celebrities for marketing can be applied to conservation (Olmedo et al., 2020). This is surprising, given that celebrities can generate substantial public attention (Anderson, 2013; Goodman & Littler, 2013), as well as influence awareness, opinion, and action (Udo & Stella, 2015; Craig, 2019). Furthermore, familiarity appears to be a factor that drives the success of endorsements (Amos et al. 2008; Udo & Stella, 2015; Hanna et al., 2018), and Udo and Stella (2015) suggested that celebrity involvement could be particularly beneficial for less recognized brands. Thus, there is also reason to question whether being named after increasingly famous (i.e., familiar) celebrities can further drive the attention species receive, and if the effect of this affiliation is stronger for species less popular than birds and mammals.

The following research will examine the effectiveness of naming species after celebrities and aims to advance the literature on how species’ names can influence public engagement with them. Based on the literature detailed above, we made the following a priori hypotheses:

1. Species whose scientific names are etymologically related to celebrities will receive more attention on Wikipedia than their closest relatives who are not named after celebrities.
2. The mean daily Wikipedia page views of celebrities will affect the disparity in attention that is received by species who are named after celebrities and their closest relatives who are not.
3. The effectiveness of naming a species after a celebrity will differ across taxonomic groups.

Method

Materials and Procedure

Celebrity species

Data collection took place between October 2020 and September 2021. We used Google to search for terms such as “species named after celebrities” and “species named after famous people”, and found the comprehensive webpages: ‘List of organisms named after famous people (born before 1800)’ (Wikipedia, 2022a), ‘List of organisms named after famous people (born 1800–1899)’ (Wikipedia, 2022b), ‘List of organisms named after famous people (born 1900–1949)’ (Wikipedia, 2022c), ‘List of organisms named after famous people (born 1950–present)’ (Wikipedia, 2022d), and ‘Etymology: Named after People’ (Curiosities of Biological Nomenclature, 2020). All webpages provided citations for the original sources where each species was described; we traced these sources using Google and Google Scholar, to verify that each species’ etymology was indeed related to a ‘celebrity’ (here, a person who has a Wikipedia page). Retrieving these resources required institutional access from the University of Exeter and University of Oxford. Our further searches for species named after famous people (using search terms such as “eponyms of species famous people”) led to a series of key texts (see Beolens et al., 2009; Beolens et al., 2011; Beolens et al., 2013; Beolens et al., 2014; Beolens, 2018; Watkins & Beolens, 2015), which also offered a great deal of species relevant to our research.

Celebrification means that fame is not an essential prerequisite to achieving celebrity status (Driessens, 2013). Therefore, we defined a ‘celebrity’ as, broadly, a person who has their own Wikipedia page that receives at least one daily page view on average (see ‘*Wikipedia page views*’ for how this was calculated). We defined ‘celebrity species’ as those named after these celebrities, and also have their own Wikipedia pages. If these conditions were met for celebrities and species named after them, we recorded the following information into a Google Sheet: the vernacular name, scientific name, and taxonomic group (amphibian, bird, fish, invertebrate, mammal, or reptile) of selected species; the name and primary occupation types of the celebrity; URLs for the species’ and celebrity’s Wikipedia page (available in any language). We did not include cases where subspecies, genera, or only vernacular names were related to celebrities for our analysis, nor did we include species whose scientific names were related to multiple celebrities. This decision was made to standardize the dataset and avoid overrepresentation of etymological associations with celebrities. Furthermore, we did not include species who were not taxonomically valid, or had a name not as clearly associated with a celebrity (for example, *Preseucoila imallshookupis* named for Elvis Presley).

Control species

The next step in the data collection was pairing each celebrity species with a ‘control species’ (defined as a phylogenetically closest relative, who also has their own Wikipedia page but is not named after a

celebrity). To identify control species, we wrote a Python script (using the *DendroPy* package; Sukumaran & Holder, 2010) to access and interact with the phylogenetic data provided by the OpenTree Synthetic Tree (a comprehensive and open-source tree of life with associated taxonomic data). Whilst the *DendroPy* package provides an API for calculating phylogenetic distance matrices (and thus a simple way to determine the closest related species), the OpenTree data does not contain any distance data or branch lengths for use within these functions. As such, it was necessary to use a simple algorithm to traverse the tree manually. First, the script iterates through the parent hierarchy of the original (celebrity species) node, until a parent is found that has more than one child node. Then, utilizing a uniform distribution to generate a random index, a child is chosen at random. If any selected child species were found to already be contained in the celebrity species list, they were discarded, and we chose another using the same process. Additionally, we discarded pairs when celebrity species (and therefore closest relatives) could not be found in the OpenTree data. This occurred if the tree instead contained a taxonomic synonym, or when the taxon contained flags that indicated the species was considered invalid: either “hidden” by a curatorial decision, “extinct”, or “incertae_sedis/incertae_sedis_inherited” (describing an unplaced taxon).

Wikipedia page views

To find Wikipedia pages for the control species and calculate statistics for each item (celebrities, celebrity species, and control species), we then wrote a second Python script using the *pageviewapi* (<https://github.com/Commonists/pageview-api>) and *wikipediaapi* (<https://github.com/martin-majlis/Wikipedia-API>) packages. We chose page views as a metric for public attention due to the frequent use of this approach for culturomics, and the advantages it provides for research (e.g., it is multilingual, open-access, and attracts a vast audience; see Roll et al., 2016; Millard et al., 2021; Mittermeier et al. 2021; Nolan et al., 2022). Since all pages use a common naming scheme, these can be consistently formed by trimming any extraneous whitespace around each item, replacing spaces with underscores, and capitalizing the first letter of the resultant string. If this page existed, a list of language-linked pages (describing the same article subject in different languages) was also generated. If a Wikipedia page for an identified control species could not be found, we randomly selected a new control species using the first Python script. For each of these pages, we used the *pageviewapi* package to retrieve the number of page views between 1 July 2015 and 1 July 2021, and a mean daily view count was then calculated using the result. It was at this point that we removed celebrities (and the affiliated species) from the dataset if they did not, on average, receive at least one daily page view.

Data Analysis

We fit Bayesian hierarchical generalized linear mixed effects models (GLMMs) to assess the effect of species being named after celebrities on Wikipedia view counts. These GLMMs were constructed with random intercepts to account for the paired nature of celebrity and non-celebrity species. Our

preregistered study design (Blake et al., 2022) defined a celebrity species as being named after a celebrity who receives at least one Wikipedia page view on average per day. When inspecting model fit, we noted better model fit (fewer outliers that our models could not account for as assessed with posterior predictive simulation draws) with higher thresholds of defining a celebrity. We also reconsidered whether one was sufficient average daily Wikipedia views to define a celebrity. Therefore, we considered four thresholds for defining a celebrity species: 1, 10, 100, or 1000 average daily views. The number of species pairs that qualified under these definitions were: 4,202, 1,794, 575, and 312 for the four thresholds. The number of species pairs can also be broken down by taxa (Table 1).

We considered two forms of observation error: (1) Student-t observation error on the (natural) log of average species daily views on Wikipedia, and (2) negative binomial ('NB2'; Hilbe, 2011) observation error on the total number of species views.

Student-t: The first option models a continuous value (log of average species daily views) with a heavy-tailed observation error distribution. This option matches the preregistered methodological approach (Blake et al., 2022). We were unable to use a simple Gaussian error distribution as noted in the preregistration because of the heavy-tailed nature of the observations (the confidence intervals would have been overly precise, and the parameters biased by rare outlying values). The log transformation necessitated excluding 64, 50, 47, or 41 species pairs from the datasets defining a celebrity as $> 1, 10, 100$, or 1000 average daily page views, where the non-celebrity species had an average (rounded) value of zero page views. This corresponded to 1.5%, 2.8%, 8.2%, or 13.1% of the species pairs for the four thresholds.

Negative binomial: The second option (NB2) is a count distribution where the observation variance grows quadratically with the expected value. This maintains the integer nature of the data generating process and allows for zeros but may not sufficiently account for outliers. Furthermore, it assumes the total Wikipedia views for each species was measured over the same time, which was usually but not always the case.

Starting with the Student-t model, our model was of the form:

$$\begin{aligned} \log(y_i) &\sim \text{Student-t}(\nu, \mu_i, \sigma), \\ \mu_i &= \alpha + \alpha_j + \delta_s + \beta C_i + \beta_j C_i, \end{aligned}$$

where y_i represents the response variable (average species daily views) for observation i , μ represents the expected value (mean), and σ represents a scale parameter. We assumed the observation error was drawn from a heavy-tailed Student-t distribution with $\nu = 4$ to account for occasional outliers. We chose $\nu = 4$ based on posterior predictive checks. The parameter α is a global intercept, α_j is a taxa-

specific (indexed by j) intercept, and δ_s is a matched species ID (indexed by s) intercept. The coefficient β is a global effect of celebrity status (C , $C = 0$ if a non-celebrity, $C = 1$ if a celebrity) and β_j is a taxa-specific effect of celebrity status.

We constrained the taxa-specific intercepts α_j , taxa-specific slopes β_j , and the celebrity/species-specific intercepts δ_s according to normal distributions:

$$\begin{aligned}\alpha_j &\sim \text{Normal}(0, \tau_\alpha^2), \\ \beta_j &\sim \text{Normal}(0, \tau_\beta^2), \\ \delta_s &\sim \text{Normal}(0, \tau_\delta^2).\end{aligned}$$

We placed the following weakly informative priors on the parameters:

$$\begin{aligned}\beta &\sim \text{Normal}(0, 1), \\ \alpha &\sim \text{Normal}(0, 5^2), \\ \sigma &\sim \text{Student} - t(3, 0, 2.5), \\ \tau_\alpha &\sim \text{Student} - t(3, 0, 2.5), \\ \tau_\beta &\sim \text{Student} - t(3, 0, 2.5), \\ \tau_\delta &\sim \text{Student} - t(3, 0, 2.5).\end{aligned}$$

We placed an LKJ(1) prior on the correlation between β_j and α_j as is the default in the package *brms* (Bürkner, 2017).

The negative binomial model was the same except for the main equations:

$$\begin{aligned}z_i &\sim \text{NB2}(\mu_i, \phi), \\ \log(\mu_i) &\sim \alpha + \alpha_j + \delta_s + \beta C_i + \beta_j C_i,\end{aligned}$$

where z_i represents counts of page views. We placed a Student $- t(3, 0, 5)$ prior on the shape parameter ϕ .

We constructed Stan (Carpenter et al., 2017) models with the R package *brms* (Bürkner, 2017). For each fitted model, we used *brms* and *cmdstanr* (Gabry & Češnovar, 2022) to sample 2000 iterations across 4 chains with 1000 iterations of warm-up per chain with the Stan No U-Turn Sampler. We assessed convergence visually with traceplots and assuring that ESS (effect of sample size) was > 100 and Rhat (the scale reduction factor) was < 1.01 for all parameters. We assessed the ability for our probabilistic models to generate our observed data via density plots of posterior predictive checks (Gelman et al., 2014).

To assess the degree to which the taxonomic groups with the most data were affecting inference for the data with fewer data (due to the hierarchical structure), and as a check that our Bayesian model with

priors was not unduly influencing our inference, we fit alternative versions of the Student-t model where each taxon was fit independently with (restricted) maximum likelihood and without priors. In this case, each model took the form:

$$\begin{aligned}\log(y_i) &\sim \text{Student-t}(\nu, \mu_i, \sigma), \\ \mu_i &= \alpha + \delta_s + \beta C_i, \\ \delta_s &\sim \text{Normal}(0, \tau_\delta^2),\end{aligned}$$

where α and β are unique to each taxon. This version retained the random intercept for δ_s to account for the paired nature of the data. We fit these models with the R package sdmTMB (Anderson et al., 2022), which uses Template Model Builder (TMB) to construct the log likelihood function and to integrate over the random effects with the Laplace approximation (Kristensen et al., 2016).

Results

The Student-t and NB2 models provided similar inference (Fig. 1 and Appendix S1). However, based on slightly better posterior predictive checks, generally smaller (more conservative) effect sizes, and consistency with the preregistered study design (Blake et al., 2022), we moved forward with the Student-t model.

Overall, we found a high probability (0.96–0.98) that celebrity species had more page views than their respective control species irrespective of the celebrity threshold. The multiplicative effect was larger but more uncertain with increasing celebrity page-view thresholds. Celebrity species had a 1.08 (1.00–1.18 95% credible interval [CI]), 1.20 (1.02–1.40 95% CI), 1.38 (1.03–1.77 95% CI), and 1.76 (0.89–2.80 95% CI) times higher expected number of page views than an associated control species at the 1, 10, 100, and 1000 celebrity page-view thresholds, respectively.

The hierarchical estimates for the various taxa tended to be positive but were somewhat variable (Fig. 1, Appendix S2). This effect was strongest for invertebrates across all thresholds of defining a celebrity. For example, for a threshold of 10 average views per day defining a celebrity, the associated invertebrate species had a 1.72 (1.37–2.23 95% CI) times higher expected number of page views than the associated control species. The posterior probability that the effect was greater than one was lowest for birds at celebrity thresholds of 1 or 10, but the posterior probability of positive effects for birds was high (0.99 and 0.95) at thresholds of 100 and 1000. For reptiles, mammals, and fish, the 95% CIs crossed one at celebrity thresholds of 100 and 1000, presumably partially due to the lower sample sizes at stricter celebrity thresholds.

Visualizing the distribution of the raw data medians of the data verified the main conclusions of the modelling. The largest difference in central tendency was for invertebrates, and the precision of the

estimates is driven by having the largest sample size. The raw distribution differences tended to be positive (more views for species named after celebrities) and to be slightly stronger at higher thresholds for defining a celebrity. We did not see a consistent pattern (more views for species named after celebrities) across reptiles or fish at higher thresholds for defining a celebrity.

Fitting separate models for each taxonomic group and fitting the models with maximum likelihood and no priors resulted in broadly the same inference with the following exceptions. The magnitude of the largest effects (invertebrates) was slightly more constrained (smaller) in the hierarchical model, as we would expect in a hierarchical model and in a model with priors. The effects for 100 and 1000 celebrity thresholds for reptiles and amphibians were closer to zero in the independent model, likely due to having lower samples sizes and the hierarchical model pulling these effects towards overall mean effect.

Discussion

To provide a novel contribution to the conservation marketing literature, we explored how online engagement with species is affected when they are named after celebrities. Most results moved in the expected direction: celebrity species across taxonomic groups generally had higher Wikipedia page views than control species, and this effect was stronger as the celebrity views threshold became more stringent. However, there remained a low probability that page views for celebrity species were overall not larger when compared with control species, and it was not always the case that the effect became more evident when species were named after increasingly famous celebrities.

According to our results, only invertebrates, amphibians, and reptiles named after celebrities tended to show higher page views than control species (with a probability greater than 0.95 up to thresholds of 100 page views defining a celebrity). Considering a recent examination of Wikipedia data revealed that awareness of insects and amphibians has decreased (or only marginally increased; Millard et al., 2021), these results could suggest that naming species after celebrities is particularly beneficial for those belonging to taxonomic groups that generally receive limited attention relative to others. It is arguable that this effect was strongest for invertebrates because this group had a substantially larger sample size for each threshold of celebrity page views, thus increasing confidence in the findings. Adding to these results, even though reptiles have been considered a less favored type of species (Ogle & Devlin, 2022), Wikipedia data have shown that awareness of reptiles has greatly increased (Millard et al., 2021). Therefore, whilst lesser-known types may benefit from this rebranding technique, perhaps the magnitude of the differences in page views declined for this group as affiliated celebrities became increasingly popular because better-known types may already receive comparable levels of attention (regardless of whether they are named after celebrities).

Regarding mammals and birds, the null results (especially for mammals with the NB2 observation error) are consistent with previous literature, whereupon changing species' names did not significantly influence public engagement with them (see Blades, 2020; Díaz-Restrepo et al., 2022). Because such species have generally received more interest and coverage than those who have less aesthetically desirable traits (Clucas et al., 2008; Martín-López et al., 2009; Skibins et al., 2017), it is conceivable that this effect therefore occurred because birds and mammals already attract public attention due to their appearances, so rebranding has limited influence on increasing public engagement. Finally, although no notable differences were found for fish, it is difficult to deduce that naming them after celebrities is less effective compared with species in other taxonomic groups. This is because the group had a substantially smaller sample size than others, so further research would need to ensure that group sizes are more comparable. Overall, the results for our study support suggestions that conservation marketing techniques (here, rebranding) can be particularly beneficial for species who are typically less popular than others (Veríssimo et al., 2017; Díaz-Restrepo et al., 2022). Moreover, they add to the notion that celebrities can help to generate public attention (Anderson, 2013; Goodman & Littler, 2013), especially for less recognized brands (i.e., species; Udo & Stella, 2015).

A strength of our study is that it measured actual behavioral data – this has previously been advised to better understand differences in popularity between species (Veríssimo, 2017). Moreover, comparing Wikipedia page views between celebrity and control species as an approach to gauge public attention has specific benefits. Firstly, quantifying interest in conservation by analyzing trends in Wikipedia is a growing trend (see Roll et al., 2016; Millard et al., 2021; Mittermeier et al. 2021; Nolan et al., 2022), notably due to its freely accessible mass number of articles on species that are standardized in structure (Roll et al., 2016; Mittermeier et al., 2021). A second advantage pertains to our decision to only examine species whose scientific names are etymologically related to celebrities. Although species' Latin names are less familiar to people outside of the scientific community (Díaz-Restrepo et al., 2022), vernacular names can have loose and multiple meanings (e.g., 'teal' or 'jaguar'; Correia et al., 2017). Therefore, even though search results have shown that these names can successfully be used interchangeably online (Jarić et al., 2016), and searching for either Latin or vernacular names can direct users to the same Wikipedia page, our decision to search for species' scientific names using the Wikipedia API ensured that data automatically collected across languages was for the correct pages, rather than the reverse where multiple irrelevant pages could be available for the same term.

As a limitation, it should be noted that the quantity of page views does not indicate reasons for public interest. Increased online attention can result from species being featured in successful conservation campaigns, but could equally occur if people want to hunt or catch them (Mittermeier et al., 2021). Nevertheless, use of marketing techniques to attract attention to species is invaluable: increasing public awareness and support for threatened species is vital for successful biodiversity conservation (Toomey

& Domroese, 2013; Davies et al., 2018). Additionally, drawing attention online is beneficial because platforms like Wikipedia may offer information including the conservation status, ecological roles, and cultural value of species (which could generate enhanced interest in their protection; Roll et al., 2016; Millard et al., 2021), and participants have been more likely to allocate donations to lesser-known species when learning they are endangered (Wilson & Tisdell, 2005; Tisdell et al., 2007). However, heightened interest in taxa may arguably not result in sustained increases in awareness or knowledge about biodiversity (Millard et al., 2020), nor does attention and information-seeking about species necessarily lead to behaviors representative of continued interest or support for them (Schwartz et al., 2012; Acerbi et al., 2020; Veríssimo et al., 2020). Therefore, this topic would benefit from further study on how public interest in species named after celebrities may be turned into more support for them. This is especially worthwhile given our results for invertebrates and amphibians, since conservation marketing techniques have previously shown to be particularly successful for attracting more donations to species often considered less physically appealing (Veríssimo et al., 2017). Inspired by Diaz-Restrepo et al.'s (2022) choice experiment design, future research could examine how participants choose to allocate real donations between presented species (i.e., a celebrity species and a control species). Such research would also benefit from including taxonomic groups besides mammals, to more thoroughly explore how the name, appeal, or familiarity of a species may predict the donations they receive.

Understanding what drives effective use of celebrities to enhance awareness and perceptions of matters related to biodiversity is essential (Duthie et al., 2017). One question that may be useful to explore is what types of celebrities attract more attention to species. On one hand, naming species after celebrities could be done based on the 'product match-up hypothesis' (that the effectiveness of an endorsement increases when there is a clear and strong association between the celebrity and a product, service, or brand; Parmar et al., 2020). Deeper fit between celebrities and brands can help audiences to remember products rather than only the celebrities (Udo & Stella, 2015). On the other hand, it should also be noted that many celebrities used to promote products or services are popular people (e.g., actors, athletes, entertainers, authors, or even well-known politicians and other public figures; Friedman & Friedman, 1979; Belch & Belch, 2013). Given the importance of familiarity for celebrity endorsements (Amos et al. 2008; Udo & Stella, 2015; Hanna et al., 2018), perhaps such celebrities should instead inspire species' names. Further testing regarding the effects of celebrity attributes (such as their familiarity or connection to the species named after them) would enable stronger use of this marketing technique, to increase public attention drawn to species.

Another factor to consider is that public perceptions of a celebrity may affect the species named after them. Through 'affect transfer', celebrities can influence perceptions towards brands (Ilicic & Baxter, 2014), and should therefore ideally be likeable (since those associated with a negative image risk implicating the brands they are affiliated with; Udo & Stella, 2015). Although our experiment showed

whether species named after celebrities attract significantly more attention on Wikipedia than control species, we did not explore the nature of this attention. High awareness of a species could potentially be accompanied by negative attitudes towards them (Veríssimo et al., 2014a; Mittermeier et al., 2021), so analyzing the sentiment of species' names (i.e., whether they have positive or negative connotations; Díaz-Restrepo et al., 2022) would be a useful step in this line of research. Future studies could assess whether there is a correlation between the sentiment attributed to celebrities and species named after them. Adding to this, sentiment of names can interact with taxonomic biases to further affect public perceptions of species (Gregg et al., 2020), so it should also be explored how any possible association between the sentiment attached to celebrities and species named after them may differ across taxonomic groups. Finally, there would be practical value in examining this matter, given previous suggestions that improving the sentiment of species' names could offer a simple and cost-effective approach to increasing conservation support for them (see Karaffa et al., 2012; Wright et al., 2015; Gregg et al., 2020). This is especially vital given the possible implications for a threatened species if they are named after a controversial or unfavorable figure.

Celebrities can successfully generate attention for brands, and rebranding species' names could help to increase public interest in them. Combining these conservation marketing techniques, our large-scale investigation used real-world behavioral data to provide a novel contribution to the literature on rebranding species' names. Overall, our results suggest that naming species after celebrities could be beneficial for those belonging to taxonomic groups that are generally less popular than others (i.e., invertebrates, amphibians, and reptiles). To enhance the practical value of our findings, it is discussed how celebrity attributes may influence the effectiveness of this marketing strategy. Furthermore, conservationists are encouraged to examine how naming threatened species after celebrities may drive conservation support (especially for those who would otherwise typically be overlooked by the public).

Supporting Information

Additional supporting information may be found in the online version of the article at the publisher's website. The authors are solely responsible for the content and functionality of these materials. Queries (other than absence of the material) should be directed to the corresponding author. Other information (such as data, code, and visualizations related to the data analysis) can be found at: <https://osf.io/v3uke/files/osfstorage>.

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Table 1. Number of species pairs per taxonomic group at each of the page-view thresholds for celebrity status.

Taxonomic Group	1	10	100	1000
Amphibian	620	194	50	21
Bird	1,024	464	94	30
Fish	178	79	26	16
Invertebrate	711	390	281	209
Mammal	658	303	61	17
Reptile	1,011	364	63	19

Figure 1. Forest plot showing the multiplicative effect on average daily Wikipedia views of naming a species after a celebrity, compared with control species (those not named after a celebrity), based on the Student-t model. Effects are separated across six taxonomic groups, and shown for increasing page-view thresholds for celebrities. Dots represent medians, and thick and thin lines represent 50% and 95% credible intervals of the posterior.