Animal common names evoke human emotions: Implications for threatened species conservation

In brief

The common names of species are an important communication tool used by conservation researchers when engaging with stakeholders and the public. Using the common names of nearly 27,000 animals from the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, we performed a sentiment analysis to investigate words in common names that drive sentiment and are associated with human emotions. We found that words driving sentiment varied across taxonomic class and threat status, and some highly frequent words are associated with negative emotions (e.g., fear, disgust).
We show that strategic name changes have potential to improve public engagement and support for threatened species and therefore to provide effective, low-cost benefits to conservation outcomes.

Background

Creating a strong connection between the public and individual threatened species can be crucial for increasing community support for conservation. These connections depend on effective communication that fosters positive attitudes and care for threatened species. One key communication tool used by conservation researchers when communicating with the public is the common names of species.

Sentiment analyses explore positive or negative sentiment – or specific emotions – evoked by text data. These analyses can explore how certain words may influence public perceptions of products, corporations or social issues.

Conservation science stands to benefit from understanding how the English common names of species impact public sentiment towards them, their likely level of public support and, ultimately, their likelihood of avoiding extinction. We drew on The International Union for the Conservation of Nature (IUCN) Red List of Threatened Species to examine how words that drive sentiment and evoke emotions may potentially impact conservation success for imperilled species.

*The word "rat" drives negative sentiment and emotions of fear and disgust. The native Australian common water rat (*Hydromys chrysogaster*) may alternatively be called the rakali – a term borrowed from the Ngarrindjeri language. Image: Ed Dunens, Flickr CC BY-SA 2.0*

Research aims

This project explored highly frequent words in the English common names of threatened animal species with high positive or negative sentiment, or association with specific human emotions. We wanted to understand whether the influence of these words varied across different groups of animals and threat statuses. Finally, we aimed to identify words as potential targets for strategic name changes due to their high frequency and negative sentiment, association with negative emotions or potential to be misleading to the public.

What we did

We performed a sentiment analysis of the common names of 26,794 animal species on the IUCN Red List. We drew from two pre-existing sentiment lexicons, one of which quantified how particular words make people feel, ranging from 1 to 9, with high scores indicating positive feelings and low scores indicating negative feelings. The other lexicon identified words that are attributed to the emotions anger, fear, disgust, sadness, anticipation, joy, trust and surprise.

We compared across taxonomic animal class (e.g., reptiles, mammals, birds) and IUCN threat statuses (Least Concern to Extinct) to see whether words driving sentiment varied across these factors.

Overall, we assessed 1,855 unique words, covering 69% of listed animal species with English common names, providing the first comprehensive analysis of such a large scale.

Animal common names containing words that influence human emotions may be strategically targeted for name changes. For example, "lesser" in the "lesser bird of paradise" may drive negative sentiment or be misleading about the species. Image: Eric Savage, Flickr, CC BY-SA 2.0

Key findings

Our key finding was that there are highly frequent words in animal common names that have strong positive or negative sentiment, and associations with human emotions. These words have the potential to influence perceptions of species, or even the willingness to conserve them. This could possibly impact conservation outcomes by driving the selection of species for research or the preferential allocation of funding toward more positively associated names and away from negatively associated names.

Common words driving positive sentiment included "golden" and "great"; while words driving negative sentiment included "rat", "lesser" and "blind". Many words were also associated with human emotions. For example, the word "snake" was associated with the emotions fear and disgust, while the word "dove" was associated with joy, anticipation and trust.
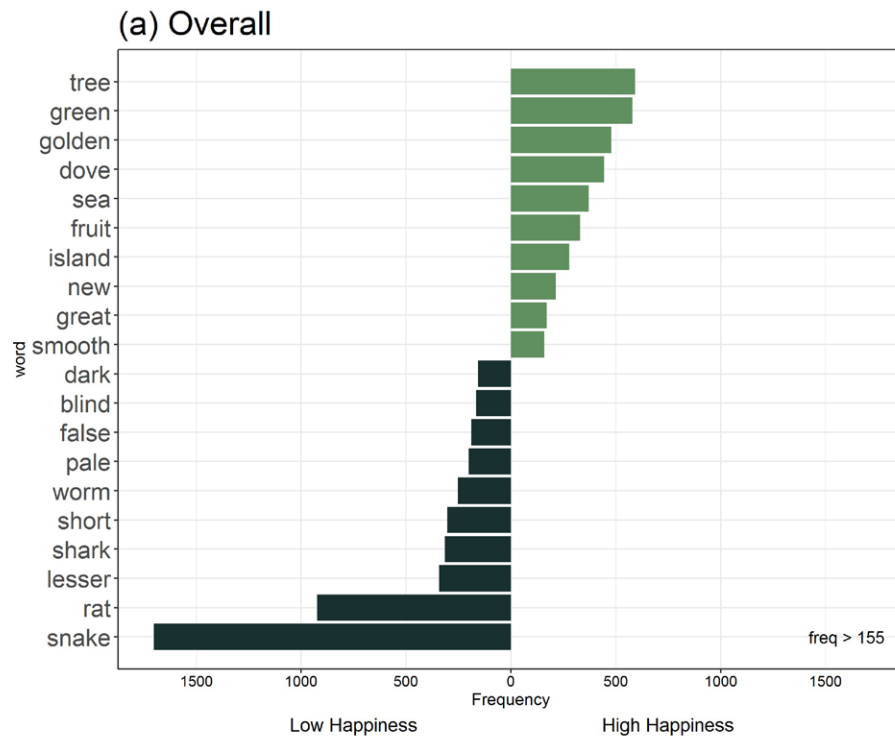
We found that the specific words driving sentiment varied across taxonomic class, even excluding words intrinsically associated with that group (e.g., "rat" in mammals). This could be due to differences in naming conventions for different taxonomic groups (e.g., "lesser" in mammals and birds), or differences in body features that tend to be named similarly.

Some of the words driving negative sentiment were names for animals that are known to have negative cultural associations. For example, the word "rat" was found to be driving negative sentiment and emotions of fear and disgust, and we know that this species has cultural and historical associations with disease, uncleanliness and deceitfulness. While it will usually be inappropriate to alter these words, it is worth reconsidering any unnecessary use, particularly for species where the word is arguably not necessary (e.g., "the rat snake"), or there are alternatives available (e.g., "the plains rat" vs. "the plains mouse").

Key findings (continued)

Taxa-specific words driving sentiment across taxonomic classes:

snake (-) in reptiles and fish

rat (-) in mammals

dove (+) in birds

Non-taxonomic words driving sentiment across taxonomic classes:

poison (-) in amphibians

lesser (-) in mammals and birds

sucker (-) in fish

Figure 1: Sentiment analysis revealed that common words driving positive sentiment included "dove" and "golden"; while words driving negative sentiment included "rat", "false" and "snake".
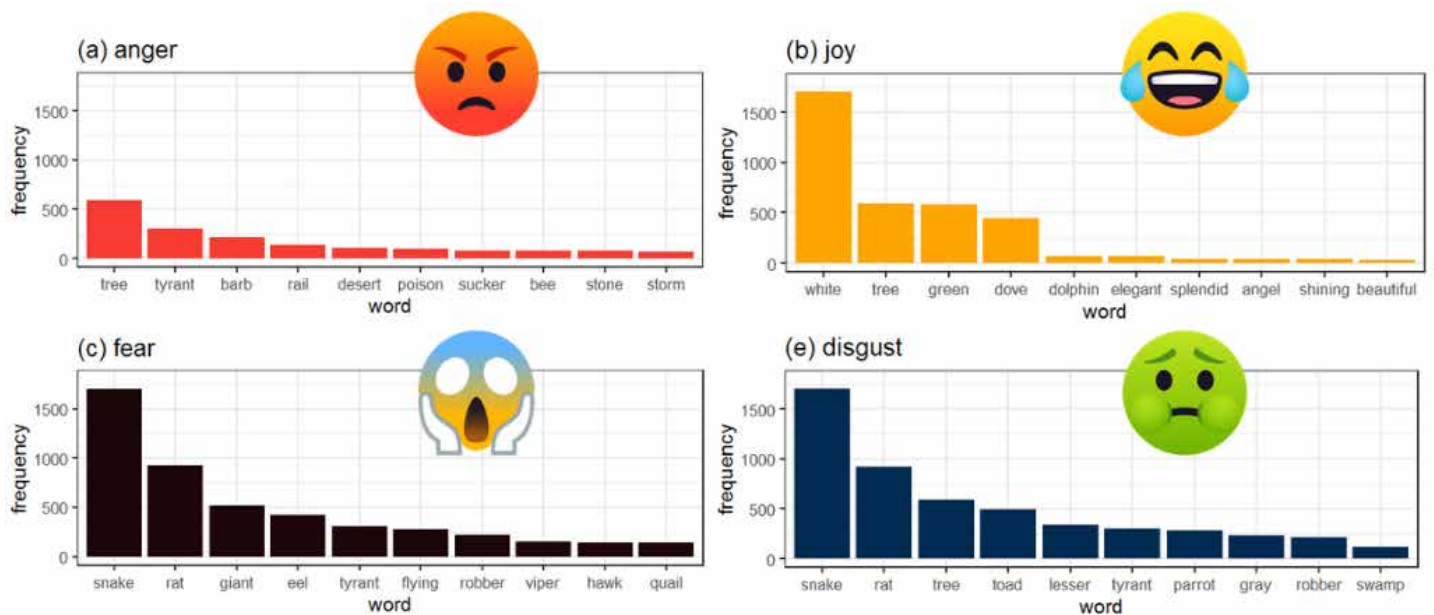

Figure 2: Frequent words used in animal common names, and the emotions that they evoke. Credit: JoyPixels 5.5

Implications and recommendations

Our findings show that there are many highly frequent words in threatened species common names that could potentially influence public perceptions. We identify highly frequent key words as targets for further research and strategic name changes due to their strong negative sentiment (e.g., "false"), association with negative human emotions (e.g., "dark", "lesser"), or potential to be misleading (e.g., "least", "common"). These words are a good starting point for considering name changes or alternatives for species with common names that are unappealing (e.g., "rough-skinned horned toad"), misleading (e.g., "lesser bird of paradise") or even simply immemorable (e.g., "little grassbird").

Our findings are important not only for taxonomists, conservationists and researchers but also for educators and public speakers. In many cases, species have more than one common or colloquial name, and speakers can refer to the name that is likely to instil the most positive sentiment. For example, the butterfly *Ypthima arctous* is known as both "the dusky knight" and "dingy ring". The former of these is more likely to inspire positive perceptions. Likewise, "Stuart's antechinus" rather than "the brown antechinus" is likely to be the more favourable name for *Antechinus stuartii*. Where appropriate permission is sought from language communities, local Indigenous language names may also be fitting alternatives to current common names (e.g., "rakali" rather than "common water rat").

Further research is required to investigate the nuanced effects of common names on public engagement in different contexts. For example, some words with negative sentiment may be engaging to certain audiences if they evoke a compelling character (e.g., devil in "Tasmanian devil").

Overall, this study has demonstrated that considering strategic name changes of words that drive sentiment and evoke human emotions in species common names may indeed be a low-cost and effective method of improving public engagement with threatened species and their conservation outcomes.

Work cited

Gregg E.A., Bekessy S.A., Martin J.K. and Garrard G.E. 2020. Many IUCN Red List Species have names that evoke negative emotions. *Human Dimensions of Wildlife*. https://doi.org/10.1080/10871209.2020.1753132

Further Information

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The immemorable name "little grassbird" may be another potential target for a strategic name change to improve public perceptions. Image: Ed Dunens, Flickr CC BY-SA 2.0