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Characterizing the trophy hunting debate on Twitter

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Article impact statement: Social media shapes public opinion and policy. Outputs will help conservationists productively engage in the online trophy hunting debate.

Abstract

Social media is an arena of debate for contentious political and social topics. One conservation topic debated online is the acceptability of trophy hunting, a debate that has implications for national and international policy. We used a mixed-methods approach (grounded theory and quantitative clustering) to identify themes in the trophy hunting debate on Twitter. We examined commonly co-occurring categories that describe people's stances on trophy hunting. We identified 12 categories and 4 preliminary archetypes opposing trophy hunting—*activism*, *scientific*, *condemning*, and *objecting*—whose opposition derived from different moral reasoning. Few tweets (22) in our sample of 500 supported trophy hunting, whereas 350 opposed it. The debate was hostile; 7% of tweets in our sample were categorized as abusive. Online debates can be unproductive, and our findings may be important for stakeholders wishing to effectively engage in the trophy hunting debate on Twitter. More generally, we contend that because social media is increasingly influential, it is important to formally contextualize public responses to contentious conservation topics in order to aid communication of conservation evidence and to integrate diverse public perspectives in conservation practice.

KEYWORDS

archetypes, debate characterization, grounded theory, mixed methods, open coding, social media, trophy hunting, Twitter

Caracterización del debate sobre la cacería de trofeos en Twitter

Resumen: Las redes sociales son arenas de debate para temas políticos y sociales polémicos. Un tema de conservación que se debate en línea es la aceptación de la cacería de trofeos, cuya discusión tiene implicaciones políticas nacionales e internacionales. Usamos una estrategia de métodos mixtos (teoría fundamentada y datos cuantitativos agrupados) para identificar los temas en el debate sobre la cacería de trofeos en Twitter. Analizamos las categorías concurrentes más comunes que describían la postura de las personas con respecto al tema. Identificamos doce categorías y cuatro arquetipos preliminares en contra de la cacería de trofeos (activista, científico, condenatorio y opositor), cuya oposición derivó de diferentes razonamientos morales. Pocos tuits (22) en nuestra muestra de 500 apoyaban la cacería de trofeos, mientras que 350 se oponían a ella. El debate era hostil, pues 7% de los tuits en nuestra muestra estuvieron categorizados como abusivos. Los debates en línea pueden ser improductivos y nuestros descubrimientos pueden ser importantes para los actores que desean participar de forma efectiva en el debate sobre la cacería de trofeos en Twitter. De manera más generalizada, sostenemos que, debido a la creciente influencia de las redes sociales, es importante que las respuestas públicas a los temas polémicos de

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conservación estén contextualizadas de manera formal para así auxiliar a la comunicación de la evidencia de conservación y para integrar las diferentes perspectivas públicas en la práctica de la conservación.

PALABRAS CLAVE

arquetipos, cacería de trofeos, caracterización de debates, codificación abierta, métodos mixtos, redes sociales, teoría fundamentada, Twitter

确定Twitter上关于战利品狩猎辩论的特征

【摘要】社交媒体是有争议的政治和社会话题的辩论场。网上辩论的保护话题之一是战利品狩猎的可接受性,对这个问题的争论还影响着国家和国际政策。本研究使用混合方法(扎根理论和定量聚类)确定了Twitter上战利品狩猎辩论的主题。我们分析了描述人们对战利品狩猎立场的类别,共确定了反对战利品狩猎的12个类别和4个初级原型——积极的、科学的、谴责的和反对的,且这些反对意见来自不同的道德推理。在我们分析的500条样本中,只有少数推文(22条)支持战利品狩猎,而有350条推文反对战利品狩猎。辩论具有攻击性,我们分析的7%的样本被归类为辱骂性言论。在线辩论还可能得不到结果,而我们的发现对于希望在Twitter上有效参与战利品狩猎辩论的利益相关者来说可能是重要的。更广泛地说,我们认为由于社交媒体的影响力越来越大,应正式地在环境背景下考虑公众对有争议的保护话题的反应,以促进关于保护证据的沟通以及将不同的公众观点纳入保护实践。【翻译:胡怡思;审校:聂永刚】

原型: 辩论特征, 战利品狩猎, 开放式编码, 社交媒体, 扎根理论, 混合方法

INTRODUCTION

Trophy hunting is controversial among conservation scientists and the wider public (Dickman et al., 2019; Ghasemi, 2021; Greenfield, 2022). The academic debate around the efficacy of trophy hunting as a conservation tool is decades old (e.g., Baker, 1997), and discussions about the acceptability of trophy hunting date back further still (Tantillo, 2002). Recent, high-profile events, such as the trophy hunting of Cecil the lion, have sparked public interest in the debate (Macdonald et al., 2016). Much conversation on the topic now takes place on social media, where conservationists and activists on both sides advocate their positions.

We believe understanding online debates is important for effectively communicating conservation evidence to the public and for incorporating diverse perspectives into management, but, as a relatively recent phenomenon, there is no formal framework for characterizing online debate. We focused on the social networking site Twitter. We contend that the content of tweets (messages shared on Twitter) provides useful data for understanding public perceptions of conservation and is an important subject of study (Hammond et al., 2022) because, ultimately, public opinion affects conservation outcomes—as demonstrated by the apparent public support (Suration, 2021) of proposed legislation to ban trophy hunting imports (UK Parliament, 2021).

Therefore, we aimed to characterize the online trophy hunting debate on Twitter. We did not weigh the balance of evidence for trophy hunting as a conservation tool or its moral acceptability (as in, for example, Dickman et al. [2019] and

Horowitz [2019]). Instead, we recognized that divergent positions in the debate likely stem from differing ethical values and priorities (Vucetich et al., 2019) and thus focused on productive engagement and transparent presentation of different perspectives.

Influence of social media

Developments in web technology mean that much contemporary social and political discourse takes place on social media (Han, 2012). Social networking websites, including Twitter, offer interactive platforms for commenting on current events and sharing perspectives with a wide audience. Potential benefits include enhanced opportunities for participatory democracy and grassroots activism, which can support traditionally under-represented voices (Valenzuela et al., 2009). Notable examples include the Black Lives Matter and #MeToo movements (Jackson et al., 2020). In a conservation context, social media offers opportunities to increase people's engagement with nature, promote conservation causes, and raise funds (Büscher, 2016) while providing opportunities for people to express their opinion about conservation practices.

Roughly one-third of the global population uses social media, and Twitter has around 330 million monthly users (Ortiz-Ospina, 2019). This is fewer than on other platforms, but widespread use by celebrities, activists, and politicians means Twitter can affect policy and public opinion. For example, Twitter is popular with journalists for finding (Kim et al., 2015) and breaking news stories (Hernández-Fuentes & Monnier, 2020)

and is increasingly used by politicians during campaigns (Cogburn & Espinoza-Vasquez, 2011) to communicate with the public (Hemphill et al., 2021) and as a barometer of public opinion (Jungherr, 2016). Consequently, the opinions expressed on Twitter have important implications for conservation because online debate may affect how conservation issues are viewed by the public (Anderson, 2017) and in turn shape political agendas (Males & Van Aelst, 2021).

Moral reasoning for conservation issues

What the goals of conservation ought to be is disputed and ultimately a question of moral values. Different perspectives can derive from differences in the foci of moral concern, the type of moral reasoning, subject knowledge, and the visions of the interrelationships between people and nature (Mace, 2014). Across these dimensions, one can attempt to place where disagreements might arise between (some) conservationists and members of the general public on issues such as trophy hunting. We considered differences in moral focus (individual animals to larger collectives) and moral reasoning (consequentialism, deontological, or virtue ethics).

Conservation scientists often (but not universally) apply ecocentric consequentialist reasoning when judging the permissibility of management interventions (Gore et al., 2011). This means judging actions based on their overall effects (i.e., consequentialism) on larger collectives, such as populations, species, or biodiversity (i.e., ecocentrism). Indeed, many view the primary goals of conservation as maintaining biodiversity and ecological complexity, and preventing extinctions (Callen et al., 2020; Sandbrook et al., 2019). However, critics suggest focus on collectives can underweight suffering caused to individual animals and present an instrumental view of an animal's value (Driscoll & Watson, 2019; Ramp & Bekoff, 2015). Disagreements, therefore, can derive from a shift in the focus of moral value from larger collectives to the collective suffering of individual animals (Callicott, 1989; Singer, 1995), leading to different judgments even if both groups are broadly applying consequentialist reasoning.

Assigning moral significance to individuals within collectives can also lend itself to different moral reasoning. For example, people may tend to apply deontological considerations when harm to individuals is the focus, where there is an inherent rightness or wrongness of an act given responsibilities to the individuals involved and independent of wider consequences. For instance, trophy hunting could be unacceptable if it is wrong to kill animals, who have some rights to existence, only to acquire a trophy. Moral judgments can shift from the act to the agents (i.e., the trophy hunters). Here, judgments about the characters of hunters align with virtue ethics perspectives, where the acceptability of an act is judged by whether it expresses virtuous character traits, such as compassion, or is conversely condemned if expressing vicious traits, such as callousness. However, what acts are considered representative of virtue or vice depends on one's moral focus and may differ between those more con-

cerned with individual animals and those concerned with larger collectives.

In the public conversation, one might expect a greater focus on individual animals rather than the collectives emphasized by traditional conservationists (Bruskotter et al., 2019). For members of the public concerned with the treatment of animals, animal rights and conservation issues may overlap (Theunissen, 2019). Influential animal rights treaties have an individual animal focus, emphasizing the inherent value of an animal, its sentience, and capacity to suffer (Regan, 2004; Singer, 1995). Natural history television also often personalizes individuals (Somerville et al., 2021) so that information pertinent to conservation issues is delivered from an individual animal perspective. Finally, moral focus on individuals is perhaps less abstract than for larger collectives because one can extend the boundaries of moral significance encompassing humans (e.g., rights, intrinsic value) to include animals more straightforwardly than one can include, for example, ecosystems that lack the defined boundaries and stability of a living entity (Palmer et al., 2014; Vucetich et al., 2015). Similarly, aspects of human social relationships, such as duties of care, can be redirected toward animals (Chan et al., 2016). Animal rights campaigns often suggest this framing through media that anthropomorphizes animals with pleas to protect the vulnerable (Rodgers & Scobie, 2015).

Shape of the trophy hunting debate on Twitter

One's moral reasoning might influence not only the information one shares on social media, but also its presentation. Those following ecocentric consequentialist reasoning may highlight empirical considerations around the impacts of trophy hunting on the conservation status of populations, species, and ecosystems. Conversely, a deontological framing may focus on the suffering or loss of an animal with intrinsic value and thus tend toward more empathetic and emotive expressions (Szekely & Miu, 2015). Finally, a virtue ethics framing may focus on the behavior and character of hunters. When Cecil the lion was hunted, considerable moral condemnation was aimed at the hunter on- and offline, and protests occurred outside the person's place of work (Macdonald et al., 2016).

When considering how opinions on trophy hunting are expressed on social media, the structure of the website is also relevant. For example, the openness of Twitter allows for the rapid spread of misinformation (Vosoughi et al., 2018), and disagreement can occasionally give way to incivility and abuse (Anderson et al., 2018; Ferrara et al., 2020). Users are likely to use styles of messaging that has the potential to go viral (be widely shared) (Botha & Reyneke, 2013), and because emotive and polarizing messages are more likely to go viral (Brady et al., 2017), online dialogue can be extreme and antagonistic (Lerner & Tiedens, 2006). Further, arbitrary features, such as constraints on message lengths (e.g., character counts), may limit nuance, producing a style of dialogue that tends to be overly simplistic (Ott, 2017).

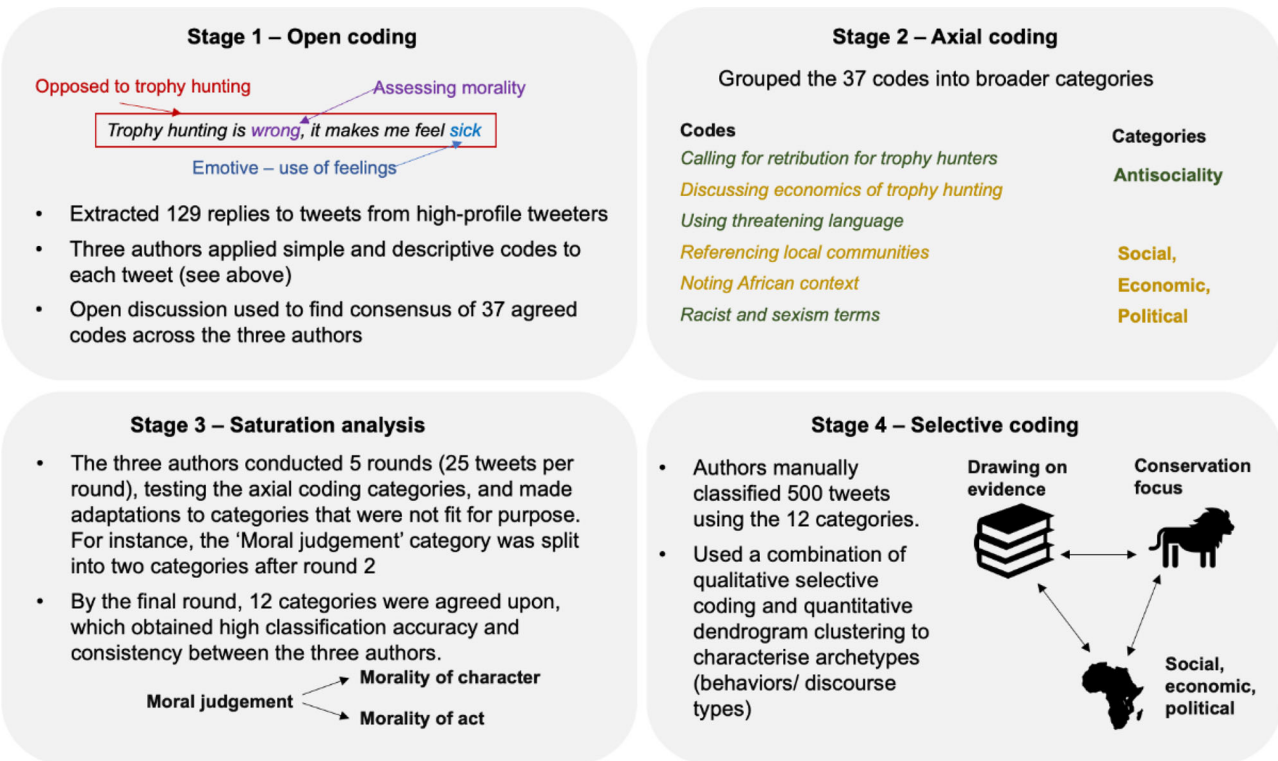


FIGURE 1 Four core stages in the examination of tweets (bullets, key points) (Strauss & Corbin, 1997; Urquhart, 2012).

We characterized the range of opinions within the trophy hunting debate on Twitter to provide insights that may help conservation scientists (hereafter conservationists) generate efficient messaging and understand why some users are more or less receptive to conservation evidence. Additionally, users' tweets provide a rich and diverse source of data about perceptions of conservation actions that could help inform socially acceptable conservation practice.

METHODS

We applied grounded theory approaches (Strauss & Corbin, 1997; Urquhart, 2012) and quantitative clustering to characterize the trophy hunting debate on Twitter. Our analyses proceeded in 4 stages (Figure 1), the complete descriptions of which are in Appendix S2.

We used open coding to extract descriptive features from a selection of replies ($n = 129$) to (relatively) viral tweets (users most liked tweet on the subject) from 14 high-profile tweeters (users with recognizable public profiles or accounts representing organizations with large memberships [HP tweeters]) that took part in the trophy hunting debate. Seven HP tweeters held positions opposing trophy hunting, 6 supported trophy hunting, and 1 was neutral. The HP tweeters were predominantly U.K.-based individuals or organizations and included celebrities, conservationists, newspapers, wildlife activist groups, and politicians. We used Twitter's advanced search function and the

term “(trophy OR hunt OR hunting OR hunter)” to filter the HP tweeters' timelines. For each HP tweeter, the tweet with the most replies was selected and the first 10 replies (where available) were collected along with the primary tweet. This resulted in 129 tweet replies collected from 14 original tweets. We had no preconceived criteria for the open coding and focused solely on exploring tweet characteristics (e.g., expressions of emotion, reference to culture or politics).

Axial coding was used to group open codes into broader categories according to shared features. We considered the tweeter's stance and rationale on trophy hunting; alignment with a particular ethical framework; reference to particular people, groups, geographies, or species; and expression of emotions.

A set of 500 tweets were collated using Twitter's advanced search function. The term “trophy hunting” was searched for each year from 2011 to 2020 (i.e., 10 searches across the 10 years). The first 50 tweets from each search were collected, resulting in a corpus of 500 tweets. We chose 500 tweets as a balance between coding time required and ensuring our sample sufficiently captured the full range of characteristics. Only primary tweets were collected. The tweet sample represented 407 unique accounts; 53 accounts contributed multiple tweets to the sample (Appendix S2). No specific geographic restrictions were placed on the searches; however, only tweets in English were used; therefore, the distribution of tweet origins was biased. Unlike the HP tweeters, who were chosen to represent stances supporting and opposing trophy hunting, our sample of 500 tweets was random.

We used saturation analyses, whereby the axial groupings were tested on a different selection of tweets so that categories could be refined and finalized. This also ensured we could reliably classify tweets according to axial categories. Saturation occurred after 3 rounds of coding 25 tweets, providing confidence that 500 tweets represented a sufficient sample size for characterizing the debate while being a manageable figure for close analysis of each tweet. The remaining 425 tweets in the data set were labeled with axial categories, and we used a combination of selective coding and quantitative clustering approaches to identify core archetypes (i.e., types of behavior, personality, and messaging).

There is debate about the use of social media data in research (Minin et al., 2021; Thompson et al., 2021). Despite our use of only public tweets, we maintained the anonymity of tweeters by ignoring identity when coding tweets and by having 1 of us collect tweets and the others perform the text analysis. To prevent identification of tweeters, the example tweets provided were paraphrased and anonymized. We took note of tweet authors only when identifying HP tweeters. This was necessary because we wanted to use our prior knowledge of the debate to ensure we had tweets covering a full spectrum of views and values. The University of Reading Research Ethics Committee provided ethical approval for the research.

RESULTS

Position

Of the 500 tweets classified, there was a large imbalance between the number of tweets opposing (350) and supporting trophy hunting (22). The remaining tweets did not explicitly express a position: 1 tweet expressed indecision, 22 were irrelevant, and the remaining 105 were unknown (we could not confidently identify a position). Given this, we focused predominantly on the position opposing trophy hunting and our interpretation of tweets supporting trophy hunting was limited.

Categories describing Twitter's trophy hunting debate

After axial coding (stage 2) and saturation analysis (stage 3), we agreed on 12 categories that describe the key arguments in the trophy hunting debate (Table 1) (details in Appendix S3). During selective coding (stage 4), tweets were tagged with a median of 2 categories (maximum of 7), reflecting, as expected, the succinct nature of arguments around trophy hunting on Twitter.

Many of our categories broadly aligned with well-recognized moral frameworks. Our categories *morality of act* and *morality of character* aligned closely with elements of deontological and virtue moral frameworks, respectively. However, by far the most numerous category was *action*, which occurred in 219 tweets. Action was largely used to call for a ban on trophy hunting or to encourage readers to sign a petition.

Of the moral categories highlighted above, morality of character occurred most frequently (71 out of 500 tweets) and was almost exclusively expressed in tweets opposing trophy hunting. Morality of character predominantly presented personal criticisms of trophy hunters. Incivility (Anderson et al., 2018) and shaming (Basak et al., 2019) frequently co-occurred with morality of character (Figure 2). We coded such features as *antisociality* (38 of 500). The milder end of antisociality included insults, but the extreme end involved threats of violence.

Also commonly co-occurring with morality of character was *affect* (47 of 500)—the explicit mention of emotions. Frequently expressed emotions were sadness and anger, but disgust was most prevalent.

Morality of act was the second most common moral category (56 of 500) and focused on judgments of the act of trophy hunting, as opposed to the character of hunters. We saw this as compatible with deontological reasoning, although it was also combined with consequentialist justifications (e.g., total suffering or threats to species conservation). It co-occurred relatively frequently with morality of character and affect, but it also occurred with *concern for individual animal* (83 of 500) and *conservation focus* (83 of 500) (Figure 2). Tweets exhibiting both morality of act and concern for individual animal typically expressed that trophy hunting was wrong because it was cruel and caused suffering to animals, whereas conservation focus, when used in tweets opposing trophy hunting, justified opposition due to threats to populations or risks of species extinctions.

Balancing and *conflation* were the least used categories, with only 15 occurrences each. Balancing predominantly occurred in tweets classified as having an unknown position, suggesting that tweets considering both sides of the debate tended to not explicitly support either side. Conflation largely occurred when tweet authors confounded trophy hunting and poaching.

Archetypes

During classification, we recognized several common category co-occurrences and derived 4 archetypes opposed to trophy hunting: *activism*, *scientific*, *condemning*, and *objecting* (Figure 3). These labels are not intended as judgment on the validity of arguments, but rather a shorthand describing common modes of argumentation. Archetypes may not be consistently expressed in people (i.e., 1 person is unlikely to only use activism tweets), but individual tweets typically fell near 1 of these archetypes.

The activism archetype encompassed tweets that directly expressed a stance opposing trophy hunting without much or any justification and with aims toward societal change, such as signing online petitions (e.g., “sign this petition to ban trophy hunting”). Although our *unsupported positional statement* category occurred almost exclusively within the activism archetype, the action category was used more generally (Figure 2a).

The scientific archetype refers to tweets in which arguments opposing trophy hunting are justified based on some

TABLE 1 Categories used to describe and characterize the features and key arguments used in trophy hunting tweets.*

Category	Description
Action	Call for action, or indication that action has been taken, in relation to support or opposition of trophy hunting (e.g., sign this petition to ban trophy hunting)
Affect	Mention of a personal, emotional response related to trophy hunting (e.g., sadness, anger, joy)
Concern for individual animal	Mention of the intrinsic value of animals, their sentience, and anthropomorphism (e.g., animals suffer and starve with trophy hunting intervention)
Antisociality	Abuse, threats, vigilantism, retribution, mocking, or prejudice targeted at a specific person or group. Beyond mere objective criticism of a person's trophy hunting-related actions or beliefs (e.g., trophy hunters deserve to die #karma)
Balancing	Considering the balance of good and bad in the debate and considering the debate as multifaceted with some opposing and conflicting stances (e.g., acknowledgement that trophy hunting has flaws, but that if the overall benefit is positive, then it should be permitted).
Conflation	Conflation of trophy hunting with other issues (e.g., poaching), use of logical fallacies, or clearly erroneous statements
Conservation focus	Mention of the impact of trophy hunting on the conservation status of individual animals, populations, ecological communities, or ecosystems (e.g., trophy hunting makes species extinct).
Drawing on evidence	Claim or argument based on evidence, regardless of whether evidence is ultimately factual or not (e.g., 10,000 animals are killed by trophy hunters every year); can be an empirical claim or argument; solely logical claims or arguments (e.g., trophy hunting kills animals so is bad for conservation) are not classified as evidence
Morality of act	Mentions the rights or wrongs of the act of trophy hunting (e.g., trophy hunting is evil)
Morality of character	Mentions the rights or wrongs of the individuals or groups engaging in trophy hunting or in the trophy hunting debate (e.g., trophy hunters are evil)
Social, economic, and political	Linking trophy hunting to issues of human culture, society, economics, or politics (e.g., trophy hunters provide economic support to the local community).
Unsupported positional statement	Stating a position on trophy hunting with no supporting reason given (e.g., I support trophy hunting).

*Detailed descriptions, with examples of representative tweets, are in Appendix S3. We report category prevalence in Figure 2, and use for archetype creation in Figure 3.

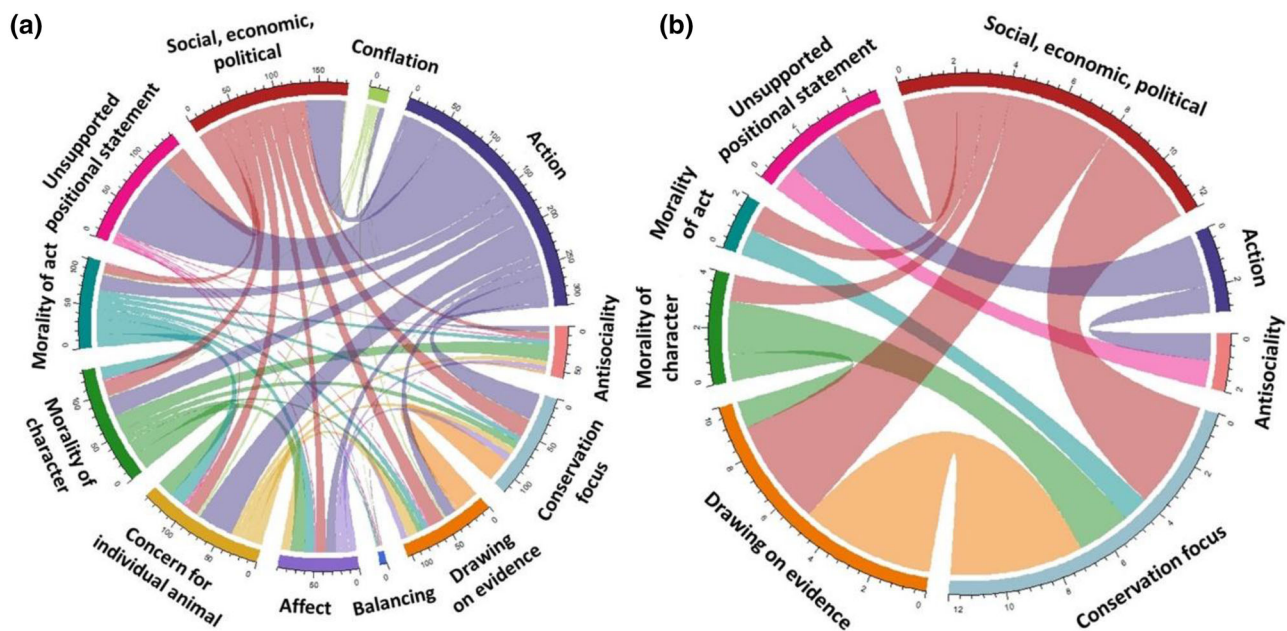


FIGURE 2 Co-occurrence of categories present across (a) tweets opposing trophy hunting and (b) tweets supporting trophy hunting (500 total tweets). Co-occurrences used to inform archetype creation. Scale indicates the frequency at which categories co-occurred (scales differ between the 2 diagrams).

consideration of empirical evidence. There were 2 main strands to this archetype. The first largely focused on trophy hunting policy (e.g., licenses, quotas, bans) connected to specific locations or associated political figures, whereas the second

highlighted evidence suggesting that trophy hunting threatens the conservation status of populations or species. However, we maintained a single category based on their shared focus on empirical claims and supporting evidence.

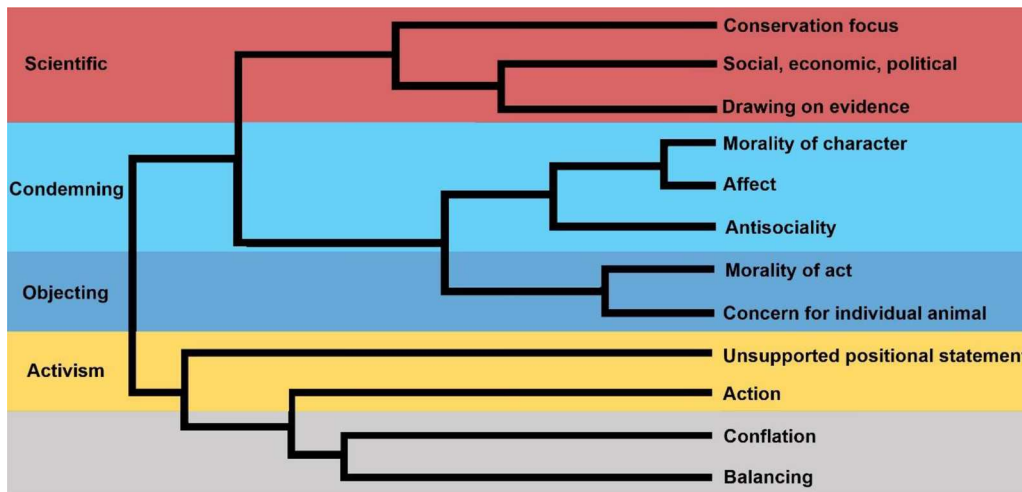


FIGURE 3 Random walk distances among tweets opposing trophy hunting (colors, complexes of arguments identified as preliminary archetypes; red, scientific; light blue, condemning; dark blue, objecting; yellow, activism; gray, not obviously representative of any position and likely resulting from low occurrence of these categories). Branch lengths indicate co-occurrence of categories, but there is no fixed cutoff for defining any archetype.

The condemning archetype contained strong moral condemnations, tendencies toward negative emotion, and suggestions of punishment for perceived perpetrators. This archetype encompassed tweets ranging from critiques of people’s characters to abuse and calls for violent punishment. These tweets primarily judged people rather than their actions.

Tweets adhering to the objecting archetype typically rejected trophy hunting due to the suffering or rights of the animals affected, with more focus on condemnation of the act than the actors.

We also briefly considered archetypes in the position supporting trophy hunting, but only sketched 2 preliminary archetypes due to the lack of tweets in the main corpus. The first group we simply labeled *hunting*; tweets implied users participated in and enjoyed trophy hunting themselves. These tweets (10 of 500) did not directly engage in the debate but expressed the emotional benefits of trophy hunting as a hobby. The second group we termed *reluctant pro*. These tweets were rare in the main sample (5 of 500), but more common in tweets used for open coding (see METHODS). Reluctant pro tweets were favorable toward trophy hunting because they suggested it provides funding for conservation and on balance was beneficial for populations, species, or local communities. However, they also often acknowledged a dislike of trophy hunting, deeming it a necessary evil.

DISCUSSION

We characterized the trophy hunting debate on Twitter, classifying tweets into 12 categories and 4 archetypes, and thus provided a holistic overview of people’s stances on trophy hunting. We also considered the context of the categories and archetypes and how our framework raises useful considerations for social media engagement.

Categories describing Twitter’s trophy hunting debate

Tweets in the action category largely called for a ban on trophy hunting and encouraged the signing of petitions. Since their inception, social media platforms, including Twitter, have been used for protesting through to fomenting revolution (Lindgren, 2013). The examples here (calling for bans or encouraging others to sign petitions) are low-effort and low-risk forms of activism that are particularly common on Twitter (Potts et al., 2014), which makes it difficult to separate mild displeasure from deep concern. The representativeness and effectiveness of such online activism relative to other forms of political activity has been questioned (Asher et al., 2019; Christensen, 2011). Nevertheless, the large number of tweets in the category suggests people frequently signal support for causes opposing trophy hunting to motivate changes in legislation.

Tweets in the morality of character category typically presented personal criticism of trophy hunters and judgments of their characters. Moral reputations play a key role in how people are evaluated in society (Goodwin et al., 2014), and poor reputations may result in social isolation (Baumard et al., 2013). Historically, the consequences of isolation have been extreme (Armstrong, 1962), but even today people can be harmed financially and psychologically (Logan, 2013; Williams, 2009), providing strong motivation to avoid a poor reputation (Vonasch et al., 2018). In an online context, reputational attacks are low cost for the accuser (O’Sullivan & Flanagan, 2003), and although it may disincentivize the behavior being criticized, it may also drive polarization (Anderson et al., 2018) and make engagement in a complex topic unpleasant.

Tweets belonging to the antisociality category ranged from mild insults combined with reputational attacks to potential threats of violence. The high number of antisocial tweets points to a high proportion of abusive and uncivil speech in the online trophy hunting debate. Other researchers have found

abusive content in 0.001–1% of messages on online platforms, and our value of ~7% is similar to highly partisan and politically extreme platforms, such as Gab and 4chan (Vidgen et al., 2019). It is important to note that online abuse is challenging to define (Brown, 2017), and many threats or insults were made generically against trophy hunters, rather than targeting specific people (although targeted threats did occur). Nevertheless, one is highly likely to encounter incivility when engaging in the trophy hunting debate on Twitter. Antisociality is highly emotive and viral (Fan et al., 2014; Song et al., 2020), and may drive cycles of increasing polarization and incivility (Song et al., 2022). The extent to which such escalation has occurred in the online trophy hunting debate may be interesting to explore.

Tweets categorized as affect contained explicit mentions of emotions, the most prevalent being disgust. There has been considerable interest in the relationship between disgust and moral judgments (Inbar & Pizarro, 2021). In Twitter's trophy hunting debate, we observed disgust toward the act of trophy hunting (and its consequences) and trophy hunters themselves. Given that trophy hunting is associated with the killing and extraction of body parts from an animal, it seems likely that the disgust expressed in the debate is consistent with previously established elicitors of disgust, such as death, blood, and gore (Tybur et al., 2009). Whether intentionally or not, expressions of disgust may be persuasive as they suggest avoidance and draw focus toward the elicitors of disgust leading others to react negatively to trophy hunting and hunters (Kelly, 2011).

Balancing tweets considered both sides of the debate with no explicit support for either. These tweets were rare, and the extent to which Twitter limits these types of expressions is difficult to determine. Limitations might be structural because restricted character counts preclude nuanced arguments, or motivational, because those without a strong opinion choose not to tweet about trophy hunting. It is also possible that the stark polarization in Twitter's trophy hunting debate limits involvement to only those most passionate about the topic because the potential emotional cost of a poorly received tweet is high.

Tweets coded as morality of act contained judgments of the act of trophy hunting itself and were normally simple expressions that trophy hunting was wrong. Though this is suggestive of deontological judgement, at they imply moral rules without exceptions or qualifications, interpretation was challenging due to Twitter's limited character count. This is an advantage of exploring Twitter messaging through co-occurrence and archetypes as the links between morality of act and concern for individual animal provide more confidence that these users are often outright rejecting trophy hunting given considerations around fair treatment of animals, rather than being constrained when expressing other objections.

Concern for individual animal tweets referenced intrinsic value, anthropomorphizing, suffering, and cruelty. These are important concepts and a full discussion of each is beyond the scope of this work (e.g., Batavia & Nelson, 2017; Vucetich et al., 2015). Instead, we highlight phrases in tweets that seemed

typical of twitter phraseology being concise, evocative, but ambiguous. Tweets referred to the innocence of animals; this is suggestive of both unjust treatment (i.e., a deontological objection), but may evoke the innocence of childhood and leverage intuitions around care in social relationships (i.e., parental responsibilities) (Chan et al., 2016). Tweets also referred to the beauty of animals, suggesting either an expression of an animals' intrinsic value (Leopold, 1947) or judgment informed by the charisma of the hunted species (Colléony et al., 2017).

Archetypes opposing trophy hunting

The archetypes combined commonly occurring codes, providing more holistic stances on the trophy hunting debate than could be presented in any single tweet. For example, the activism archetype, which combined the unsupported positional statement and action categories, could be considered a virtual analogy to a protest—a public display of disapproval while leveraging support for a cause. The predominance of activism tweets in our sample suggests widespread opposition toward trophy hunting on Twitter and that Twitter is seen as a worthwhile platform for activism.

The condemning archetype often contained very strong personal criticism and emotive language. Judgment was aimed at human participants and moral reasoning centered on virtue. Expressing emotion or calling for certain forms of punishment does not invalidate one's argument, and it is easy to find situations in which moral condemnation is justified. However, we considered this archetype prone to social media distortion because these expressions are likely to be engaging, viral, and more readily delivered online than in person (Crockett, 2017; Song & Wu, 2018). This may make the condemning archetype effective as a social media strategy (Brady et al., 2017), but it is likely to polarize the debate and make engagement unpleasant (see below).

Tweets in the scientific archetype tended to use appeals to evidence to justify their position, with much of the evidence being focused on claims about conservation issues. Tweets in this archetype rejected trophy hunting because they considered it detrimental to the health of populations, species, or both. This view is consistent with consequentialist reasoning and a moral focus centered on collectives (populations, species) that we associate with a traditional conservation approach, although in this case tweets were opposed to trophy hunting, in contrast to the reluctant pro (see below).

Finally, tweets belonging to the objecting archetype focused on the intrinsic value of hunted animals and the unacceptability of the act of trophy hunting. Typically, these tweets adopted a moral focus on the treatment of individual animals independent of wider consequences. They objected to the act of trophy hunting on the basis that it is inherently wrong to kill or cause the suffering of an animal. We see this stance as most consistent with deontological reasoning, but it could also be consequentialist. Objecting tweets aligned with perspectives commonly presented in animal rights movements.

Preliminary archetypes supporting trophy hunting

The 2 archetypes representing tweets supporting trophy hunting were preliminary sketches given the rarity of the position (22 of 500). The group reluctant pro is the mirror of the scientific archetype and primarily tweeted arguments made supporting trophy hunting in the scientific literature and elsewhere (e.g., Dickman et al., 2019). The way social, economic, and political factors were used by both tweeters opposing trophy hunting and the reluctant pro archetype may be worth further consideration. This category captured arguments supporting and opposing trophy hunting based on economic and social outcomes. However, mention of these factors was rare in the main corpus, which was heavily opposed to trophy hunting. Instead, political and social statements referred to the money derived from hunting, geographic location (e.g., the United States or Africa), or political figures (e.g., Donald Trump) or policies (e.g., Botswana's ban and subsequent reinstatement of trophy hunting). This may represent differences in political focus in social, economic, and political expressions, with tweets opposing trophy hunting often prioritizing domestic factors (e.g., ban on trophy hunting imports), whereas reluctant pro tweets focused more on the effects on local communities where trophy hunting takes place.

Considerations for productive engagement

Our goals for undertaking this work were to provide a characterization of the Twitter trophy hunting debate to aid productive online communication from conservationists to the public, and vice versa. Though we wish conservationists to develop their own interpretation of our characterizations and its implications for communication, we provide our opinion on productive engagement. By productive we mean a reasonable opportunity to acquire new information and observe different perspectives, with the potential to update one's own opinions or present information and one's own perspectives to influence the opinions of others.

We take the position that 2 of the archetypes opposing trophy hunting allow productive discussion and 2 do not. Tweets in the activism archetype largely fail because they rarely contained moral or empirical claims, such that little information makes it back into conservation. Calling for action to limit trophy hunting also suggests limited receptivity to different perspectives. The condemning archetype may also largely fail to support productive engagement, although more context is provided for criticisms based predominantly on considerations of virtue. Our results provide evidence that these discussions are often remarkably antisocial, suggesting limited receptivity to opposing opinions and the risk that abuse will be aimed at those offering them. The extent to which conservationists should engage in hostile online debate is not obvious, though we see an opportunity for the development of institutional or organizational support for conservationists engaging in online

debate. Ideally, prominent opponents of trophy hunting, particularly with large online followings, could take steps to reduce antisociality by limiting their more extreme expressions, condemning those they see from their followers, and moderating personal criticisms of identified individuals.

Contrastingly, we see opportunities for productive engagement for the other 2 archetypes. For tweets in the scientific archetype, discussion can be based around the current best evidence of the impacts of trophy hunting on conservation. Here, consideration could be turned toward the common factual claims made online about trophy hunting, their alignment with current conservation evidence, and methods to deliver conservation evidence effectively in online discussion. Steps toward more formal analysis of conservation topics as they are discussed on social media are starting to be produced (Hammond et al., 2022), and we think such work can be beneficial.

Tweets in the objecting archetype may present the best opportunity for productive discussion about the appropriate moral focus. A key role of conservationists, who have specialist knowledge about conservation topics, might be to broaden the moral focus in online debate so that a wider set of stakeholders are under consideration. This could be making a compelling case for a focus on larger ecological collectives, such as populations or biodiversity, but may also include consideration of human participants, such as local communities. Indeed, public support for trophy hunting bans may vary substantially given considerations of the impacts on biodiversity and local communities (Survation, 2021). These cases may need to be made within the moral framework people are currently utilizing (e.g., our rights and responsibilities to local communities and respect for their independence and self-determination, balanced against responsibilities to hunted animals).

Useful insight may also reach conservationists. One can assume conservationists do not have perfect moral knowledge, there are well-founded criticisms of much conservation practice (e.g., Vucetich et al., 2019), and the normative goals of conservation are a subject for continual debate and reevaluation (Callen et al., 2020; Mace, 2014; Robinson, 2011; Sandbrook et al., 2019; Soulé, 2013). Our methods provide a way to include the perspectives of a large number of people outside of conservation science in important conservation debates. These values can contribute to the ongoing debates about the normative values of conservation, and there may be opportunities for targeting productive compromises. For example, incorporation of welfare perspectives might result in wider public engagement and the opportunity to leverage the platforms, organization, and political power of animal rights groups toward conservation causes (Perry & Perry, 2008).

Methodological limitations

A limitation of our work is that our own biases will have, to some extent, influenced the way we interpreted tweets and developed categories. We made conscious efforts throughout to reduce subjectivity. To recognize our biases prior to study

design, we all considered our position on trophy hunting and potential conflicts of interest (Appendix S4). When classifying tweets, 1 of us played devil's advocate, challenging the views of the others (challenges were frequent and robustly debated); categories were described carefully to reduce subjectivity in interpretation; and classification consistency and accuracy were tested prior to data entry (Appendix S4). We recognize that the identification of HP tweeters is not immediately reproducible; however, given these accounts were chosen to represent a spectrum of opinion on trophy hunting, we believe selection of alternative HP tweeters would ultimately have resulted in similar results.

Twitter itself does not represent an unbiased sample of the global population. Users are skewed toward 25- to 34-year-olds, over 56% of users identify as male, and almost 18% are located in the United States (https://blog.hootsuite.com/twitter-demographics/#General_Twitter_user_demographics). These demographics and our use of English search terms mean many voices were not included in the tweets we sampled (e.g., those who do not use or are without access to Twitter and those who do not speak English). Therefore, we may not have characterized all aspects of the trophy hunting debate.

It is possible that the sample of 500 tweets was insufficient to characterize the main themes in the debate. It was impossible to fully resolve nuances between the archetypes supporting trophy hunting. We are, however, confident that the 12 categories cover the main themes of the debate given our arrival at saturation after 3 rounds of tweet categorization, but new themes may emerge over time. As such, this work should be a starting point for future studies.

Relatedly, tweets are short and, in our analysis, have limited surrounding context. Therefore, when linking a tweet to an archetype or form of moral reasoning, there is an inferential step that can introduce error because the meaning implied by the tweet author, their beliefs, and motivations are not accessible. However, given that we saw repeated codes co-occurring, we have more confidence that we identified forms of moral reasoning expressed in the online debate even if interpretation of an individual tweet was necessarily uncertain.

Despite working from the bottom up in our classification of major themes, the categories we identified align with well-recognized moral frameworks and features of other online debates.

Given the potential for social media to influence public opinion and policy, it is important that any debate be productive and not disrupted by hostility or misinformation. We provide evidence that the online debate around trophy hunting can be hostile and unproductive. Many conservationists currently engage in this debate with little support and in an ad hoc manner. We propose that our scheme and the identification of emerging themes may be useful to conservationists engaging online because it places the public debate in context, highlights opportunities for productive engagement, and contributes to the conversation around effective conservation messaging in an increasingly online world.

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Additional supporting information can be found online in the Supporting Information section at the end of this article.

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