Identifying negative sentiment polarity in the Judas technique

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Abstract

In the context of conservation science and management, the Judas technique refers to outfitting an animal (a Judas animal) with a radio transmitter or other identifier so that its movements can be tracked to locate conspecifics. Although this term is commonly used, some consider it offensive due to historical associations of the word Judas with anti-Semitic sentiments. Thus, the term has a negative sentiment polarity (i.e., the assertion that words can have positive, negative, or neutral connotations). We investigated the etymology of the Judas term in peer-reviewed scientific literature to outline its contextual introduction and use. Prior to the term being co-opted by conservation scientists Judas [animal] was a common term in the livestock industry to describe animals used to lead herds to slaughter. Subsequently, the term has been published and promulgated through conservation-related research and the literature. Due to a negative sentiment polarity linked to this term, especially among members of the public, alternative nomenclature may be preferred to increase objective and dispassionate scientific communication.

KEYWORDS
altered terminology, etymology, invasive species, management, offensive terminology, radio telemetry, radio tracking, scout

1 | INTRODUCTION

The Judas technique is a term used to describe a specific set of methods employed by conservationists whereby an animal is outfitted with a radio transmitter or electronic tag in order to track its movements and locate conspecifics (Johnsen, 1980; Parkes, 1984; Smith et al., 2016; Taylor & Katabira, 1988; Woolnough, Lowe, & Rose, 2006). Since the methodology was first developed and proposed in the literature as a novel technique for research and management (Johnsen, 1980; Johnsen & Hasler, 1977; Thomas, 1982), it has been applied to a variety of taxa (Table 1). Typically, the technique is employed to aid in the location and eradication of nuisance or invasive species, but it has also been utilized to collect data on cryptic species (Grabowski & Jennings, 2009; Moore et al., 2017). In some instances, the term Judas is criticized as offensive because of the perceived negative connotation toward Jews and Judaism, indicating a negative sentiment polarity (i.e., the assertion that a word can have neutral, positive, or negative connotations; Gregg, Bekessy, Martin, & Garrard, 2020). The concept of sentiment polarity is informed by sentiment analysis, a
A computer-based approach to ascribing connotation (positive, negative, or neutral) to words (Gregg et al., 2020; Liu, 2012). Herein, we identify an apparent negative sentiment polarity associated with the term Judas, but we do not present a formal sentiment analysis of the polarity as described by Liu (2012) and Gregg et al. (2020).

Acknowledgement that the words people use have an impact on perception and valuation of a subject is increasingly a topic of discussion in many fields including conservation science (Gregg et al., 2020). As scientists, it is a best practice to avert unnecessary and easily avoided conflict that can affect perceptions or associations with our work. Examining the etymology of nomenclature in science can provide a general understanding of names by documenting a history or background of meanings associated with their roots (often Latin or Greek roots; Dodd Jr. et al., 2016), as well as provide insight to the mindsets and personalities of the scientists involved by elucidating their choices for whimsical names (Cameron, 1974; McClellan 2019). Herein, we use the etymology of the term Judas to illuminate the path that led to the choice of individuals to use the term Judas during the course of their scientific investigations. Additionally, biological concepts are known to change over time, but the words

| Study species | Citation |
|---------------|----------|
| Common carp, (Cyprinus carpio) | Johnsen, 1980 |
| Feral goats (Capra hircus) | Parkes, 1984 |
| Invasive rats (Rattus spp.) | Wace, 1986 |
| Feral goats (C. hircus) | Stone & Keith, 1987 |
| Feral goats (C. hircus) | Stone & Anderson, 1988 |
| Feral goats (C. hircus) | Taylor & Katahira, 1988 |
| Feral goats (C. hircus) | Coblenz, van Vuren, & Main, 1990 |
| Judas fish concept | Carrick, Thomson, & Calley, 1990 |
| Feral pigs (Sus scrofa) | Baras & Lagardère, 1995 |
| Feral goats (C. hircus) | McLaren & Gifford, 1997 |
| Himalayan tahr (Hemitragus jemlahicus) | Rainbolt & Coblenz, 1999 |
| Judas fish (C. carpio) | Forsyth & Tustin, 2001 |
| Feral pigs (S. scrofa) | Diggle, Day, & Bax, 2004 |
| Feral donkeys (Equus asinus) | Wilcox, Aschehoug, Scott, & van Vuren, 2004 |
| European starlings (Sturnus vulgaris) | Bough, 2006 |
| Robust redhorse (Moxostoma robustum), cites Judas fish but calls study animals guide fish | Woolnough et al., 2006 |
| Feral pigs (S. scrofa) | Grabowski & Jennings, 2009 |
| Common carp (C. carpio) | Parkes et al., 2010 |
| Red deer (Cervus elaphus) | Bajer, Chizinski, & Sorensen, 2011 |
| Feral donkeys (E. asinus) | Crouchley, Nugent, & Edge, 2011 |
| Feral pigs (S. scrofa) | Woolnough et al., 2012 |
| Feral camels (Camelus dromedaries) | Nugent, Yockney, Whitford, & Cross, 2014 |
| Burmese pythons (Python bivittatus) | Spencer et al., 2015 |
| Feral goats (C. hircus) | Smith et al., 2016 |
| Invasive species | Lethbridge, 2016 |
| Coconut rhinoceros beetles (Oryctes rhinoceros) | Lennox, Blouin-Demers, Rous, & Cooke, 2016 |
| Feral goats (C. hircus) | Moore et al., 2017 |
| Rhesus macaques (Macaca mulatta) | Robertson, Ostfeld, & Keesing, 2017 |
| | Hanson et al., 2019 |
that we use to communicate those concepts often remain unchanged (Pensotti, 2019). It is our goal to demonstrate the importance of suggesting changes to scientific terminology that move toward choices that are neutral and precise to avoid affecting the perception and valuation of the information being presented.

In 2019, members of our research group were contacted by a journalist after publication of a newspaper article that discussed our fieldwork on invasive Burmese pythons (Python bivittatus) in the Greater Everglades Ecosystem. The journalist stated that they had received criticism from a rabbi concerning use of the term “Judas snakes” in the article. This instigated thoughtful discussion within our research group and led to the framing of this contribution in which we examined the history and usage of the name “Judas” as a term in a conservation and research context. We aimed to: (a) Identify and understand the negative sentiment polarity that is inherent to the term Judas; (b) Determine the origin of the term Judas in the sciences; and (c) Suggest the use of alternative terms to communicate the same concept.

To identify and understand the negative sentiment polarity, we conducted a literature review of the etymology of the term Judas and focused on its use in the conservation sciences. We used Google Scholar and the USGS online library system to compile information on the history of the term Judas and its use in conservation science. We used the search terms “Judas” “Judas animal” “Judas technique” “Judas, wildlife” and “Judas, radio telemetry.” We also searched all references within our selected Judas technique literature to trace the original use of the term in the sciences until we were no longer able to find the term Judas. We found numerous citations in the literature that used the term Judas and detailed the use of the Judas technique as it is typically applied in the field of conservation and related research, and a selection of articles is detailed in Table 1. Additionally, we sought feedback from professionals who have subject matter expertise regarding the study and application of the Judas technique on whether the term Judas is perceived to have negative connotations, as well as from the aforementioned rabbi about negative perceptions for the term Judas.

2 | ORIGINS OF JUDAS, AN INHERENT SENTIMENT POLARITY, AND JUDAS ANIMALS

The word Judas originates from the story of Judas Iscariot in historical and theological documents including the various Christian Bibles. The story of Judas appears in various forms and sometimes with conflicting levels of detail depending on the cultural or religious context in which it is framed (e.g., Hand, 1942). However, all versions of the story of Judas Iscariot relate to his reported betrayal of Jesus of Nazareth, the messianic figure of the Christian tradition and a pivotal figure in several faith traditions who is often simply referred to as Christ. This has resulted in the term Judas often being considered synonymous with traitor although other connotations also exist (Hand, 1942; Utley, 1944). Brustein (2003) found that conflating Judas Iscariot with Jewish people in a predominantly Christian cultural framework may engender anti-Semitic sentiments on a large scale and lead to general untrustworthy and treacherous characterizations of Jews. This strong sentiment polarity inherent to using Judas and its potential anti-Semitic undertones suggest that an assessment is warranted of use of this term in the sciences.

The oldest reference that we found referring to a Judas animal betraying conspecifics is linked to the livestock industry in 1900 when a sheep named Judas Iscariot was credited with leading the rest of a flock to slaughter (The New York Times, 1900). This origin of Judas animals, specifically goats and sheep in slaughterhouses, is corroborated elsewhere (Umland, 1941) and one of the first individuals to publish on a Judas animal in a conservation and research context cited this history as a source for using the term Judas goats in his 1984 publication on the subject (J.P. Parkes, Kurahaupo Consulting Christchurch, New Zealand, written comm., 2020; Parkes, 1984). In addition to the clear origins of Judas animals in abattoirs, the connotation of Judas in the modern English language is synonymous with treachery (Oxford English Dictionary accessed July 7, 2020) and a researcher who employed the Judas technique in a highly cited paper on the method expressed that the choice of the term was therefore logical (D. Taylor, National Park Service [retired], oral comm., 2020). Although use of Judas animals in slaughterhouses is not fully a functional equivalent to wild or feral animals, the concept that a Judas animal is one that betrays others is conserved.

3 | ETYMOLOGY OF JUDAS TECHNIQUE

The earliest scientific paper that we found to use the term Judas in a research context is Johnsen (1980) which discussed Judas fish. Although that paper may have been the first formal use of the Judas term in the sciences the concept of using telemetry equipment to track an animal to conspecifics was previously established (e.g., the use of ultrasonic tracking equipment to identify the locations of wintertime aggregations of carp [Cyprinus carpio]; Johnsen & Hasler, 1977). Subsequently, radio-telemetry systems were used to track feral goats (Capra hircus) in...
the Kermadec Islands of New Zealand and this technique was proposed as a more efficient method to locate goats in rough terrain, although the animals are not referred to as Judas goats (Thomas, 1982). The use of the Judas term in a conservation and research context later appeared in a 1984 publication describing feral goats fitted with bells on Raoul Island in New Zealand (Parkes, 1984) and in 1986 in reference to potential use of Judas rats to eradicate populations on oceanic islands (Wace, 1986). The term received more attention following publication of a highly cited paper on the successful use of Judas goats in eradication efforts on the island of Hawai‘i (Taylor & Katahira, 1988). We learned from a historical review of the goat eradication efforts on Hawai‘i that the idea to use radio-telemetry as a tool for detection and removal came about as an informal suggestion from one of Taylor and Katahira’s fellow park employees, although there is no discussion in that document of the reasons for choosing the term Judas for the telemetered goats (Bonsey, 2011).

There appears to have been some level of collaboration and correspondence among conservationists and land managers working with nuisance species in the late 1970s and early 1980s, particularly with feral goats on islands (D. Taylor, National Park Service [retired], oral comm., 2020 and J.P. Parkes, Kurahaupo Consulting, Christchurch, New Zealand, written comm., 2020), but available information does not allow conclusions about who first envisioned the technique or whether it arose independently in different research groups. Regardless, we can reasonably conclude that the choice to refer to this method as the Judas technique was predictable as the term Judas has been synonymous with treachery throughout much of historical and cultural and scientific history suggests that more precise and functional alternative terms would be preferable in scientific discourse.

We aimed to identify functional alternative terms to replace Judas [animal] through discussion with our coworkers, supervisors, and collaborating scientists involved in telemetry projects that use telemetered animals to locate conspecifics. These discussions quickly yielded a long list of alternative terms that were functional and descriptive. The simplest and most precise nomenclature for Judas animals would be telemetered animals in keeping with the precedent set by Parkes et al. (2010) with feral pigs. However, researchers working with different taxa may identify and select different options for alliterative or descriptive purposes. In the context of ongoing collaborations with researchers and...
land managers working with invasive pythons in southern Florida, study animals are referred to as scout snakes, an alliterative term that has resonated with members of the public during outreach activities. Any alternative terms should be evaluated for negative sentiments or connotations of their own, as well as for their suitability to ascribe to nonhuman animals (e.g., spy, snitch, traitor, Benedict Arnold, Brutus, etc.). In addition, an alternative to references of the Judas technique could be the “aggregation technique,” since the technique is typically used to locate aggregations of animals, whether these aggregations are a function of gregariousness, reproductive seasonality, or other reasons.

5 | DISCUSSION

Because words can carry strong sentiment polarity, it is valuable for scientists to consider how a word they use will affect the perception and valuation of the subject. In this contribution, we have identified and described a negative sentiment polarity that is intrinsic to the term Judas because of potential anti-Semitic undertones. Our review of published literature and communications with former authors on Judas animals indicates that the term entered the scientific lexicon due to pre-existing associations with Judas, duplicity, and Judas animals in the livestock industry. However, considering the offensive nature of the term and the existence of alternatives that are more neutral and precise, we suggest the use of other terms to describe this type of work.

Using a word such as treachery is an imprecise means of describing behaviors of animals. The Judas technique does not exploit an individual animal’s treacherous nature but rather a certain behavior or life history trait that results in aggregations of multiple individuals. If Judas goats are a functional management tool, it is because goats are gregarious and aggregate by nature (Shackleton & Shank, 1984).

Ascribing a treacherous nature to a nonhuman animal could lead people to further project human traits onto them which may have unintended consequences, while alternative terms provide a more accurate and neutral portrayal of the behaviors that are being exploited to locate conspecifics. In an examination of the changing values associated with island ecology in Mexico, Wanderer (2015) discussed the concept of betrayal as a human construct such that using Judas-derived terms to describe nonhuman animals selectively anthropomorphizes and even villainizes some species. Similarly, wolves have been characterized as evil and were even portrayed in a negative context in early science and natural history writings (Fritts, Stephenson, Hayes, & Boitani, 2003), while snakes are considered objects of fear and are also characterized as evil in some cases (Stanley, 2008). Associations with malevolence and fear have obvious implications for the valuation and perception of conservation efforts for wolves and snakes, much in the way that a negative sentiment polarity in the term Judas affects the perception of scientific studies that employ the term. Apart from being a term with strong sentiment polarity linked to anti-Semitism, the implication of treachery in the Judas technique creates a biased characterization of the behaviors that are being exploited to locate individuals, since the animals being tracked are presumably unaware that the device they carry could lead conspecifics to capture or destruction.

Contemporary events demonstrate that words can remain the same through time, while the concepts that they represent change (Amato et al., 2018; Pensotti, 2019). Recognition among scientists of the linguistic and cultural associations between duplicity and the term Judas may result in use of more neutral, descriptive, and precise terms to describe our studies. In general, an awareness of the importance of selected terms may benefit the scientific community by reducing the chances for misinterpretations or other consequences that could ultimately affect the impact and valuation of the information being presented.

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CONFLICT OF INTEREST

All authors submit that they have no conflict of interest pertaining to the creation and publication of this contribution.
AUTHOR CONTRIBUTIONS
Austin L. Fitzgerald: Performed literature reviews, corresponded with experts on the subject, and drafted all versions of the manuscript. Jillian M. Josimovich: Provided comments and revisions throughout production and created documents and surveys for previous versions of the manuscript. Charlotte J. Robinson: Provided comments and revisions on early versions of the manuscript. Robert N. Reed and Andrea F. Currylow: Supplied the vision for this contribution and provided guidance and important comments and revisions throughout production.

DATA AVAILABILITY STATEMENT
No data were collected or analyzed in the production of this contribution.

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All authors operate under the Ethics Guide for DOI Employees and adhere to USGS Fundamental Science Practices. No permit or other documentation regarding ethical treatment of animals or other ethics-related documentation was required for the creation of this contribution.

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