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**Article**

## **What's in a name? An evidence-based approach to understanding the implications of vernacular name on conservation of the painted dog (*Lycaon pictus*)**

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### **Abstract**

This study explores the effect of common name choice for *Lycaon pictus* on donation behaviour and public perception, an investigation inspired by use of a less common vernacular name by the BBC in their 2018 series *Dynasties*. Accordingly, journal articles on Web of Science are reviewed to determine the preference in research, followed by the analysis of the results from two online surveys completed by the general public. A willingness-to-pay (WTP) survey, in which all participants unknowingly saw one of four variations in common name, establishes the influence exerted on donating behaviour by name choice, with a word association survey uncovering unconscious associations for elements of each variant. Findings indicate “African wild dog” to be preferred in journal articles, with increasingly few exceptions in recent years. However, the surveys established that, whilst there is no significant link between name choice and donation size, there is a significant relationship between choice of words and how negatively they are perceived. This study argues that “painted dog” is the most positive option for use by charitable organisations and in education, although not without its own challenges, but also that the conflict caused by this naming debate is potentially equally as harmful to painted dog conservation as the debate itself.

**Keywords:** *Lycaon pictus*, BBC, *Dynasties*, willingness-to-pay, word association, vernacular name

## 1. Introduction

*“What’s in a name? That which we call a rose  
by any other name would smell as sweet.”*

— William Shakespeare (2004, 2:2:43)

Names have long been considered a source of identity for human beings, and a factor in self-identification and differentiation from others (Dion, 1983). It has been argued that name choice has such a profound effect on children that it is likely to alter personality development (Windt-Val, 2012), with younger groups even influenced by a belief in “nominal realism” — that it is impossible to exist without a name (Dion, 1983, p. 249). Into adulthood name remains a core tenet in self-identification, allowing expression of what one believes to be distinctive about their self (Dion, 1983) and so can be seen as a vehicle through which value is conveyed. Given the importance of names in expressing identity, it is reasonable to attribute this same weight to comparable linguistic labels, such as brand names or species common names. They are also likely to be fundamental in the understanding of these non-human identities and in the recognition of what sets them apart from others, therefore functioning as central drivers of value estimation and preference.

Commercially, an effective brand name fits into the marketing 4Ps — *Product, Price, Place, and Promotion* (Goi, 2009; Hart & Sumner, 2020), where the *Price*, or cost, of the product reflects its perceived value (Twin, 2019). Brand name is thought to be critical in establishing this, second only in importance to the product itself (Silk, 2006). Considering some sort of value to be derived from the brand name in this way, termed brand equity, can be positive or negative (Silk, 2006; Berry, 2000; Lee *et al.*, 2009; Wänke *et al.*, 2007), wherein the positivity (or lack thereof) of consumer perceptions and prior experiences affect their willingness to engage with a brand or product (Berry, 2000; Lee *et al.*, 2009). Suffering from negative brand equity can prompt companies to undergo rebranding to shed unappealing reputations (Berry, 2000). Brown (1992, cited in Dall’Olmo Riley, 2016, p. 398) describes brand name as “nothing more or less than the sum of all the mental connections people have around it”. It is this network of mental associations that determines the perceived quality and value of the product, and marketers must match up the cumulative meaning of these connotations with how they want their brand to be framed (Robertson, 1989). It is agreed that emotive words contribute to an effective brand name (Robertson, 1989; Berry, 2000), but it is critical that they are carefully chosen to inspire emotions that align with the desired perception of the product, as the mental image that forms in the mind of the consumer relies at least in part on their perception and experience of the words which constitute said brand name.

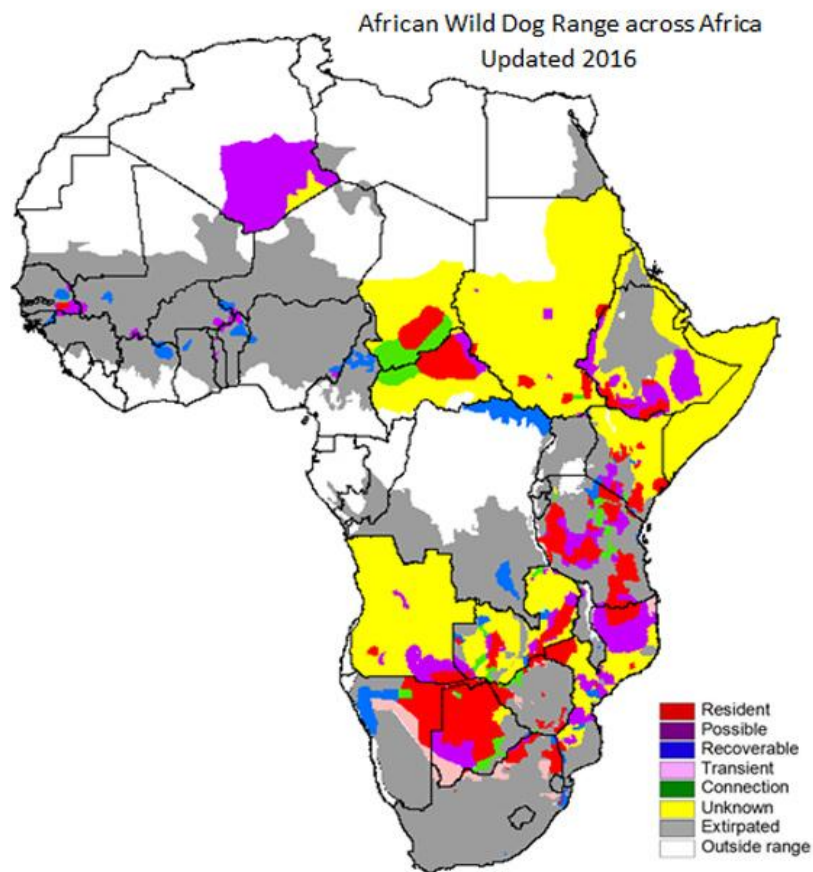
Framing a species as the *product* or brand, members of the general public as the consumer, and conservation organisations as the marketer, it is possible to see conservation in a commercial light, and common name choice burdened by brand equity. Assigning

economic value, though, to both natural resources and non-consumptive uses of nature is fraught with logistical hurdles and criticisms of anthropocentrism (McCauley, 2006; Goulder & Kennedy, 1997; Costanza *et al.*, 1997). Furthermore, biocentric approaches are also scrutinised for shifting focus towards easily valued services and conservation of species that are appealing to the public because of their high levels of “charisma”, itself driven most influentially by their IUCN status and body size (Macdonald *et al.*, 2015; Hart & Sumner, 2020). Animals that weigh between 20 and 40kgs, for example, proved the least popular, and attributes such as body markings had little influence (Macdonald *et al.*, 2015). Incidentally, painted dogs weigh between 20 and 30kgs (Macdonald & Sillero-Zubiri, 2004) and are often distinguished by their highly patterned fur, contributing to their ranking as least charismatic amongst the species included in Macdonald *et al.*’s study. Considering that reputation is likely to also be a key driver of charisma performance scores (Macdonald *et al.*, 2015), one can hypothesise that this species would benefit from a campaign to improve its reputation, and therefore, brand equity. In such a move, though, it must be taken into account that marketing for non-profit organisations is more complex than conventional for-profit marketing given its wider range of audiences and often intangible objectives (Sargeant & MacQuillin, 2016). Critically, they must also prioritise collaboration over competition to optimise resource expenditure and achieve common goals (Sargeant & MacQuillin, 2016), a cohesion that is currently lacking, at least linguistically, between organisations working towards conservation of *Lycaon pictus*. It would be wise to join forces and adopt a single term or, at the very least as suggested by Nick Dyer (Painted Wolf Foundation, Pers. Comm.), quash criticism between groups and work towards establishing cognitive links between each name variant.

### 1.1. The painted dog and its persecution

Likely referring to Lycaon of Arcadia, a Greek King turned into a wolf by Zeus as a punishment (Encyclopaedia Britannica, 2007), *Lycaon* can be translated into English as “wolf-like”. *Pictus*, the past participle of the Latin verb *pingere* (to paint), can be translated into English as “painted”. *Lycaon pictus*, therefore, is most accurately translated into English as “painted wolf-like creature”, a name Rasmussen (1999) describes as acknowledging the unique nature of the genus, whilst also indicating that the similarity with true dogs (*Canis spp.*) is in appearance only. Indeed, *Lycaon pictus* is the only extant member of its genus, which is entirely unrelated to domestic dog breeds or wolves, and exhibits distinctive physical characteristics within the Canidae family (Bere 1956; Rasmussen, 1999). They are exceedingly sociable, living and hunting highly successfully in large packs that normally comprise members of an extended family (Bothma & Walker, 1999; Macdonald & Sillero-Zubiri, 2004; Fraser-Celin & Hovorka, 2019; Creel & Creel, 1995). Amongst the threats faced, kleptoparasitism — mostly by hyenas — threatens their food supply (Bothma & Walker, 1999; Fanshawe & Fitzgibbon, 1993), with habitat fragmentation, reduced prey numbers, disease, roads, and disruption by photographic safaris also posing dangers to

their populations (Woodroffe, 2001; Fraser-Cellin & Hovorka, 2019; Wayne *et al.*, 2004; Woodroffe *et al.*, 2004; Mortensen, 2019). Woodroffe (2001) argues, though, that human persecution has been most damaging to their numbers. Formally extant across large swathes of Africa, their numbers and distribution are now greatly reduced, as seen in Figure 1. In 2012, they numbered around just 6,600, with only 1,400 of those mature individuals and, as even the largest subpopulations may only contain less than 250 mature individuals, they are officially listed as “endangered” by the IUCN (Woodroffe & Sillero-Zubiri, 2012). Persecution was primarily instigated by game protection associations at the latter end of the 17<sup>th</sup> century, as they considered “wild dogs” to be vermin and a threat to game (Pringle, 1982, p.78). In the 18<sup>th</sup> century this became a state sponsored scheme whereby bounties were offered for the killing of this “vermin”, including leopards, silver and red jackals, caracals, and “hunting dogs” (Pringle, 1982; Woodroffe, 2001). In Zimbabwe, numbers dropped further in the 1950s upon the hiring of workers to bolster these activities (Edwards *et al.*, 2013). It is thought that it has been easy to blame painted dogs for game and livestock deaths due to their living in diurnal, mobile packs with extensive home ranges, making them “highly visible”, regardless of proof (Rasmussen, 1999, p. 138).



**Figure 1:** Painted dog distribution (Range Wide Conservation Program for Cheetah and African Wild Dogs, 2019)

During the first periods of state-sponsored vermin persecution, the term “wild dog” was used to refer collectively not only to *Lycaon pictus*, but also to feral domestic dogs, hyenas,

and jackals (Rasmussen, 1999; Pringle, 1982). “African wild dogs” have also adapted to consume their prey rapidly after bringing it down, often before it has died, in order to reduce the aforementioned risk of kleptoparasitism, and consequently were often labelled as cruel or vicious killers (Bere, 1956; Fanshawe & Fitzgibbon, 1993; Bothma & Walker, 1999; Creel *et al.*, 2004; Fraser-Celin & Hovorka, 2019). This reputation supported an image of “wild dogs” that presented a danger to humans and livestock, itself worsened by confusion with other species. However, studies since have shown that estimations of livestock killing by painted dogs are greatly over-exaggerated and that they pose little threat to human life (Rasmussen 1999; Bothma & Walker, 1999). Formal culling ended in the 1970s, and they are now protected by law in a handful of countries (Creel *et al.*, 2004), but with enduringly low numbers it is unlikely that this is sufficient; recent estimates suggest that only 466-554 individuals exist in protected areas (Pretorius *et al.*, 2019). It is probable that “African wild dogs” suffer from enduring negative brand equity. Confusion over the term “wild dog” and its conflation of *Lycaon pictus* with feral domestic dogs and jackals has fostered negative mental associations of the term, and it would be fair to say that “wild dog” has a strong link with words such as “vermin”, “feral”, and “vicious”. Should there be a re-branding of *Lycaon pictus*, shedding the name “African wild dog”, to rid it of these past connotations, and would this make a tangible difference to its conservation? Some conservationists believe this to be the case, and so a number of organisations have adopted alternative common names such as Painted Dog Conservation, Painted Dog Research Trust, Painted Wolf Foundation, and the David Shepherd Wildlife Foundation (Painted Dog Conservation, 2019; Painted Dog Research Trust, 2019; Painted Wolf Foundation, 2019; David Shepherd Wildlife Foundation, 2019).

Having said this, large organisations such as the IUCN, WWF, and the African Wildlife Foundation continue to use “African wild dog” (Woodroffe & Sillero-Zubiri, 2012; WWF, 2019; African Wildlife Foundation, 2019). Alternative common names have included variations and combinations of “African Wild Dog”, “Painted Wolf”, “Painted Dog”, and “Cape Hunting Dog”, although the latter is now avoided as they are not endemic to the Cape (Sheldon, 1992; Rasmussen, 1999). Of course, this naming debate is limited to English and neglects the numerous other languages spoken within the African continent, and also those around the rest of the globe, many of which use their own variations. Latin languages, for example, often refer to the species by variants of “Lycaon” — e.g. Spanish: Licaón; French: Lycaon; Italian: Licaone (Reino Animalia Wiki, 2015). Although Dr. Greg Rasmussen believes that “Painted Lycaon” would be the common name truest to its taxonomic description, whilst also describing what sets this species aside from others, he laments that this level of change would be challenging. Whilst working with *Lycaon pictus* he underlines that adopting the name “painted dog” assisted in removing bias associated with the label “African wild dog” and in improving perceptions of the species (Dr. Greg Rasmussen, Painted Dog Research Trust, Pers. Comm.). Of the existing common (or brand) names for *Lycaon pictus*, it is logical to hypothesise that the most effective variant is that which is particularly emotive and elicits a network of positive mental associations.

## 1.2. Dynasties

On 2<sup>nd</sup> December 2018, the BBC aired their 4<sup>th</sup> episode of the series *Dynasties*, titled “Painted Wolf” (BBC, 2019a). It followed the same packs of painted dogs in Mana Pools National Park in Zimbabwe that feature in the subsequently published *Painted Wolves: A Wild Dog’s Life* (Dyer & Blinston, 2019) by Nick Dyer and Peter Blinston, trustees of the Painted Wolf Foundation. Dyer and Blinston chose, in part, to adopt this name so newfound attention for this species generated by the release of the documentary would not be lost. Discovering at the time of filming that an online search for that name generated almost nothing, and believing a main threat to *Lycan pictus* to be a general lack of knowledge of its existence, this was a valuable opportunity to improve engagement and education (Nick Dyer, Painted Wolf Foundation, Pers. Comm.). Indeed, 6.9 million UK viewers tuned in to watch the episode (BARB, 2019), and would have found very little upon subsequently searching for the species online had it not been for this well-founded decision. Contrastingly, the BBC erroneously wrote of their choice of vernacular name that *Lycan pictus* translates directly into “painted wolf” and that they are both more closely related, and phylogenetically and behaviourally more similar to the wolf (*Canis lupus*) than domestic dogs (*Canis lupus familiaris*), despite their independence from both. They also argued that conservationists had been increasingly keen to adopt this name in order to improve public perception of this threatened and historically persecuted species (BBC, 2019b; BBC Earth, 2019). This decision sparked debate of a long-standing issue over the most appropriate name for what is to be known in this study as the painted dog. Despite honourable intentions, no evidence-based support bolstered their claims, prompting the question of whether they were purely speculation and what, really, is in a name?

In order to identify the extent of the alleged effect of vernacular name choice on engagement with, and attitude towards, painted dogs, this study conducts investigations on three fronts. Alongside a literature review of common name usage in peer-reviewed articles on the Web of Science to determine the status quo in research, it aims to ascertain the relationship between vernacular name choice and donating behaviour through a willingness-to-pay survey. Finally, a word association survey illuminates the subconscious associations that the elements of each name variation trigger, and their likely effect. As a whole, this study will provide the much-needed evidence to determine not only whether rebranding “African wild dogs” is advisable, but also whether or not the name “painted wolf” is the best choice.

## 2. Methods

### 2.1. Literature review — Web of Science

On 19<sup>th</sup> September 2019, a literature review was undertaken on Web of Science (WoS). WoS was chosen since the quality of the results was the priority, and it is known to ensure

the academic rigour of journals included in the results, and Google Scholar is not (De Winter *et al.*, 2013; Web of Science Group, 2019). Google Scholar is also thought to generate incorrect meta-data (De Winter *et al.*, 2013), which was to be important in this review. Lastly, WoS allows for the Plain Text export of search results required for the linguistic analysis.

A search was conducted for “*Lycaon pictus*” in the Title field. Results were inspected manually to determine, of the articles that refer to *Lycaon pictus* by a common name, those which used variations other than “African wild dog”. Given the small number of deviations, it was possible to determine by hand any variations, and the frequency of each, and these were listed alongside publication date and journal. After this, the original search results were exported into a Plain Text document, which was refined to leave only the titles remaining. This document was imported into NVivo V12.4 and a word frequency query conducted to determine the top 30 most frequent words in these titles. A word cloud to visualise these data was then created, whereby the size of the word reflected its frequency (Miley & Read, 2011). Visualisation in this way allows for a clearer representation of patterns in data, here word frequency, than presenting it in tabular form (Dickinson, 2010).

The second search conducted was for “*Lycaon pictus*” in the Topic field. Once again the search results were exported into a Plain Text document, and then imported in NVivo. A text search query was then run for “dog” to determine which variations in vernacular name appeared in these results, then each of these variations were run as independent text search queries to determine their frequency. A search for “painted wolf” was also conducted because of its use by the BBC.

## 2.2. Willingness-to-pay survey

To determine public attitudes towards variations in vernacular name for *Lycaon pictus*, a willingness-to-pay (WTP) survey was designed on SurveyMonkey. WTP surveys are often used to determine the likelihood that consumers will purchase a product at a given price (Foreit & Foreit, 2004). Methods vary, but surveys in which consumers are asked to value a nonmarket product often use the contingent valuation (CV) direct method, which is a form of stated preference survey, due to the lack of existing market data (Brown, 2003; Breidert *et al.*, 2006). As such, these are often used for environmental phenomena (Hanemann, 1994) and involve directly asking a consumer for the value that they would be willing to pay for a particular product (Foreit & Foreit, 2004). Although there are some concerns about the relationship between hypothetical valuation and actual purchasing behaviour (Hanna & Dodge, 1995), in this study the perceived numerical value of the product itself is less important than the difference in valuation between each name variation. First, participants were asked to select their continent of origin then, in order to establish the potential effect on donation size driven by vernacular name, a modified CV survey required participants to split a hypothetical £1000 in its entirety between five species, all pictured next to one another, with their English common name displayed below.

A high quality photo of each was licensed from Adobe Stock Photo (2019) and cropped, where necessary, to clearly show a single, adult animal in the wild looking straight into the camera. The exception to this was the Emperor Penguin, with whom this was not appropriate, and whose photo instead depicts two adults in profile looking to the floor, displaying their characteristic head markings. The species that were chosen were African Lion, Bengal Tiger, Chimpanzee, Painted Dog, and Emperor Penguin, and the photos used can be seen in Figure 2. These species were selected specifically as they are the five species that feature in BBC’s *Dynasties* (BBC, 2019c) and would consequently have experienced similar media exposure from the publication of the series, helping to reduce bias from familiarity with one over another. The critical element of the survey design was ensuring that all participants saw one of four variations in common name for *Lycaon pictus* underneath its picture. This was achieved with the A/B testing feature, and the common names chosen as options were the three most frequent variations that appeared in the literature review — “African Wild Dog”, “Cape Hunting Dog”, “African Hunting Dog” — alongside the BBC’s preferred variation “Painted Wolf” (BBC, 2019b; BBC Earth, 2019). It was critical that participants were not aware of this feature, and so this was specifically not publicised when disseminating the survey, and could not be determined when taking part. As far as participants were aware, the survey was identical for all respondents.



**Figure 2:** Species photos used in the WTP survey

Once responses had been collected, the mean donation for each version was calculated and, subsequently, SPSS V24 was used to execute a one-way ANOVA analysing whether the relationship between name variation and donation was significant. The main dataset was then divided by continent and further one-way ANOVAs run to explore whether the relationship between name variation and donation was significant within each continent. Mean donations to *Lycaon pictus* by continent were investigated and a last one-way ANOVA conducted to determine if donations to the painted dog differed significantly by continent, with a post-hoc Tukey test included to reveal the drivers of this.

### 2.3. Word association survey

Following the WTP survey, a word association (WA) study established immediate reactions to terms that formed part of each vernacular name variation. In WA surveys, participants



are required to submit the first word that comes to mind upon reading the stimulus. This method establishes an unrestricted picture of the subconscious image painted by that term in the mind of the respondent, and is often used to determine attitudes in sociology and psychology (Donoghue, 2000; Roininen *et al.*, 2006; Ares & Delize, 2010; Andrade *et al.*, 2016). The stimuli in this survey were: “Wild”, “Dog”, “Wolf”, “Painted”, and “Hunting”.

Responses were listed by term and judged by the researcher to be negative or not (positive/neutral) in order to provide quantitative evidence of how negative each stimulus was perceived to be. Simultaneously, the responses were imported into NVivo and word frequency queries run to illuminate the thirty most common responses to each stimulus. NVivo was instructed to group stemmed words (e.g. friend, friendly). The outputs of these queries were illustrated with word clouds and were subjected to the same negativity judgement as the list of all responses. A chi-square test of independence performed on each examined the relationship between the stimuli and the negativity of their top 30 most frequent associations, avoiding any potential sensitivity to the larger sample size that could be caused by completing this test with all responses (Bergh, 2015). A table of positive/neutral vs. negative responses for each was created in order to uncover the drivers of significance.

### 3. Results

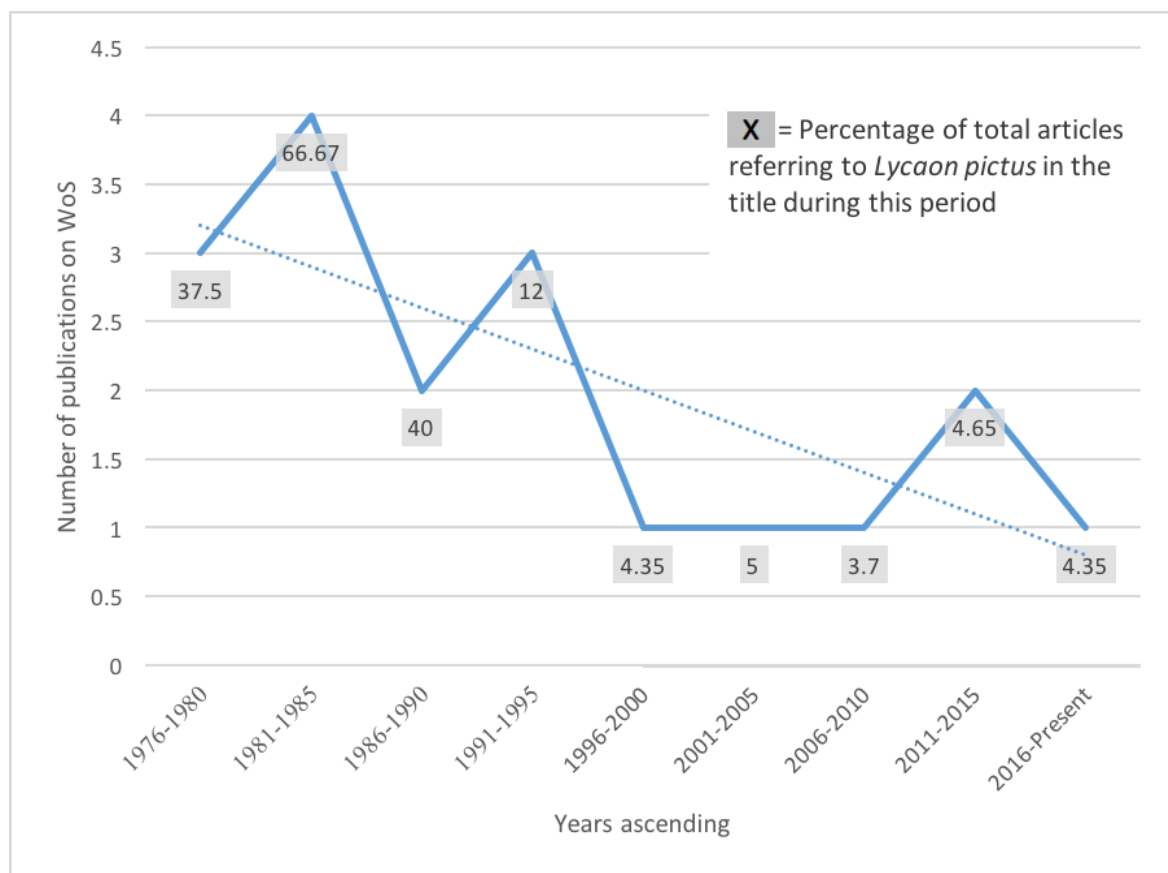
#### 3.1. Literature review — Web of Science

The literature search for “*Lycaon pictus*” in the Title produced 180 results between 1976 and 2019. One hundred and seventy-seven of the 180 results refer to *Lycaon pictus* by a vernacular name, all using “African wild dog” with the exception of 18 titles, which are displayed in Table 1 alongside the journal and year in which they were published. The majority of these exceptions occur before 2000, with not a single occurrence since 2016, and no uses of “Cape” after 1991, as expected due to the species’ lack of endemism. The trend line on Figure 3 shows a decreasing preference for variations in common name other than “African wild dog” in peer-reviewed articles on Web of Science, and also a sizeable decline in their use as a percentage of total articles referring to *Lycaon pictus* in the title.

**Table 1:** Variations of the vernacular name for *Lycaon pictus* in the titles of published articles

Date published	Name Variation	Journal
September / October 2016	African Painted Dog	<i>Zoo Biology</i>
September / October 2014	African Painted Dog	<i>Zoo Biology</i>
March 2012	African Hunting Dogs	<i>Journal of Zoo and Wildlife Medicine</i>
March 2007	African Hunting Dog	<i>Journal of the South African Veterinary Association</i>
January 2002	Painted Hunting Dog	<i>Behavioural Ecology</i>

April 1999	Painted Hunting Dog	<i>Biological Conservation</i>
September 1991	Cape Hunting Dogs	<i>Acta Veterinaria BRNO</i>
August 1991	African Hunting Dogs	<i>Journal of Veterinary Medicine Series B</i>
1991	Cape Hunting Dog	<i>Comparative Biochemistry and Physiology A-Molecular and Integrative Physiology</i>
May 1990	African Hunting Dogs	<i>Journal of Veterinary Medicine Series B</i>
1988	Hunting Dog	<i>Biological Conservation</i>
1985	Hunting Dogs	<i>South African Journal of Wildlife Research</i>
1983	African Cape Hunting Dogs	<i>Journal of Zoo Animal Medicine</i>
1981	Hunting Dogs	<i>Onderstepoor Journal of Veterinary Research</i>
1981	Hunting Dog	<i>South African Journal of Wildlife Research</i>
1979	Cape Hunting Dog	<i>Journal of the South African Veterinary Association</i>
1979	Cape Hunting Dogs	<i>Journal of the South African Veterinary Association</i>
1976	Cape Hunting Dog	<i>Biochimica et Biophysica Acta</i>



**Figure 3:** The number of publications on Web of Science referring to *Lycaon pictus* in the title by a vernacular name other than “African Wild Dog”

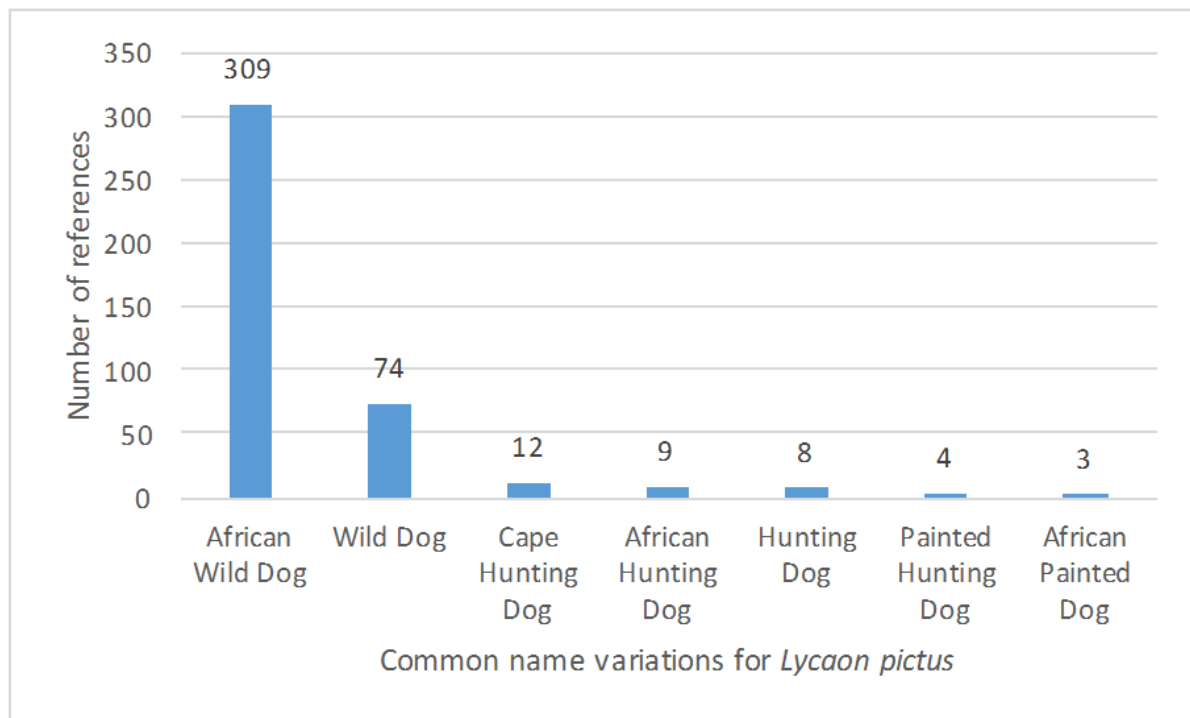
The common name variations displayed in Table 1 are, in descending order of frequency: Cape Hunting Dog, African Hunting Dog, Hunting Dog, African Painted Dog, Painted

Hunting Dog, and African Cape Hunting Dog. There are no published articles referring to *Lycan pictus* as the Painted Wolf, and no instances of the word “wolf” in the 180 titles resulting from this search. Figure 4 displays a word cloud showcasing the 30 most frequent of the words that do occur.



**Figure 4:** Top 30 most frequent words in titles of publications with “*Lycan pictus*” in the title

The search for “*Lycan pictus*” in Topic returned a total of 538 results between 1976-2019. Figure 5 illustrates the number of references to each common name variation for *Lycan pictus* in the results of this search. It clearly demonstrates the overwhelming preference for “African wild dog” in articles that use a vernacular name, and again exhibits no instances of “Painted Wolf”.



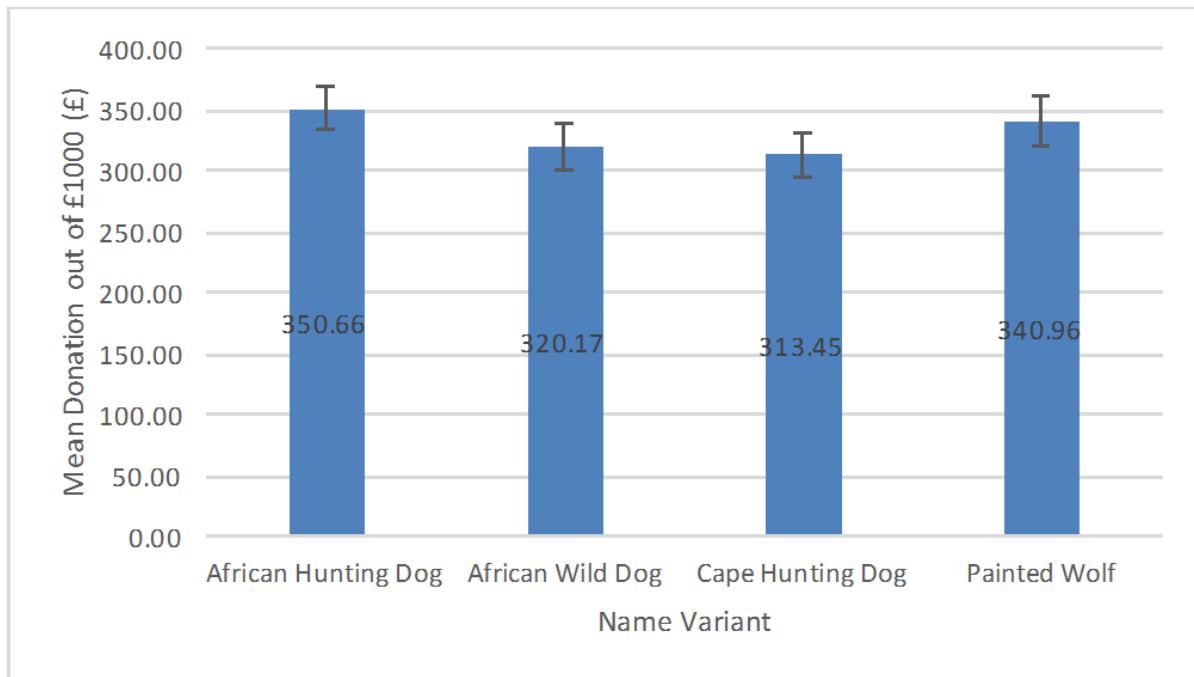
**Figure 5:** Variations of common name used in articles on Web of Science that list *Lycaon pictus* in topic between 1976-2019

### 3.2. Willingness-to-pay survey

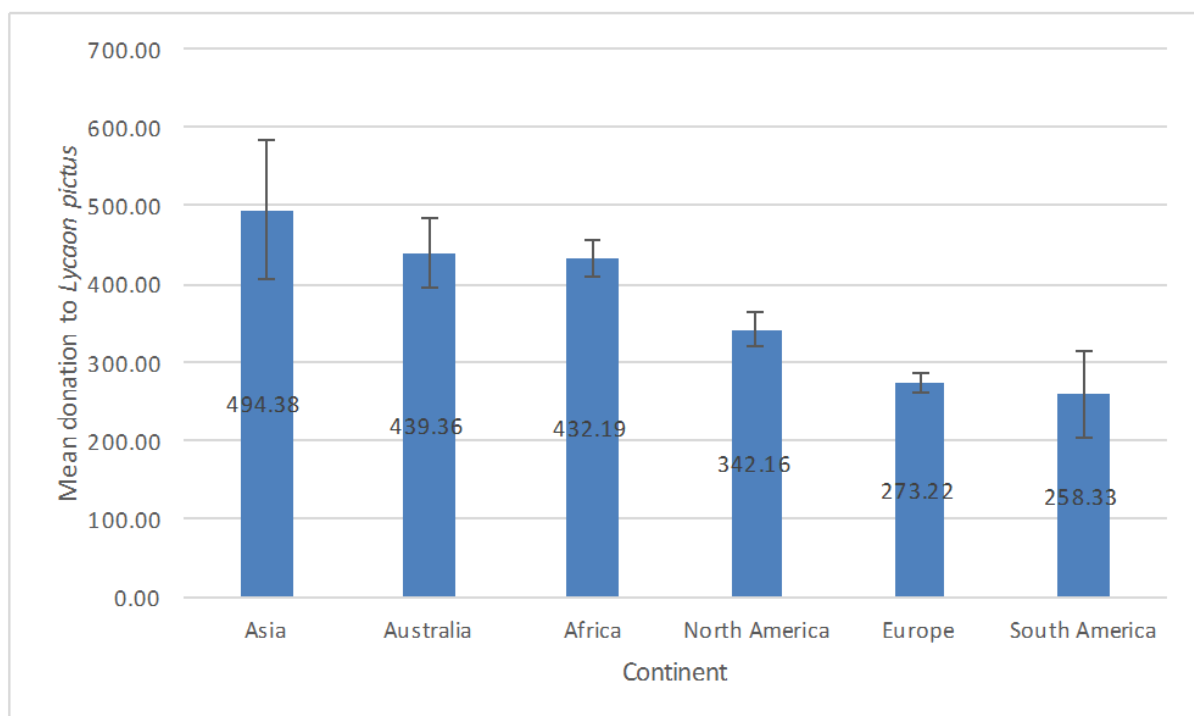
781 respondents took part in the WTP survey, which produced donations of between 313.45 and 350.66 (GBP) out of a potential £1000 for the painted dog. The variation which elicited the highest mean donation was “African Hunting Dog” at 350.66, with “Cape Hunting Dog” eliciting the lowest at 313.45, as illustrated in Figure 6. Despite these differences in mean, there was no significant difference in donation between the name variations (one-way ANOVA:  $F_{3,777} = 0.868$ ,  $p = 0.457$ ). Considering donations from each continent as separate datasets also returned no significant result when comparing mean donations made for each name variable in Australia ( $F_{3,43} = 0.402$ ,  $p = 0.752$ ), South America ( $F_{3,2} = 0.649$ ,  $p = 0.654$ ), North America ( $F_{3,124} = 0.759$ ,  $p = 0.519$ ), Europe ( $F_{3,419} = 1.249$ ,  $p = 0.292$ ), Africa ( $F_{3,157} = 2.313$ ,  $p = 0.078$ ) or Asia ( $F_{3,12} = 3.113$ ,  $p = 0.067$ ).

The respondents of the survey hailed from 6 out of 7 continents, with mean donation to painted dogs varying between 258.33 and 494.38 out of £1000, as shown in Figure 7. Asia donated the highest mean amount and South America the lowest, although their smaller sample sizes ( $n = 16$  and  $n = 6$ , respectively) mean that the standard error is high for these groups. Differences in mean by continent were significant (one-way ANOVA:  $F_{5,775} = 12.878$ ,  $p > 0.001$ ), so donation to *Lycaon pictus* is meaningfully affected by continent. The post-hoc Tukey test revealed that this significance is driven mostly by Europe’s relationship to Africa, Asia, and Australia ( $p > 0.001$ ,  $p = 0.008$ ,  $p > 0.001$ , respectively). The other significant difference was between Africa and North America ( $p = 0.031$ ) who

rank third and fourth in terms of mean donation size.



**Figure 6:** Mean donations to *Lycaon pictus* by name variant. Error bars are standard error.



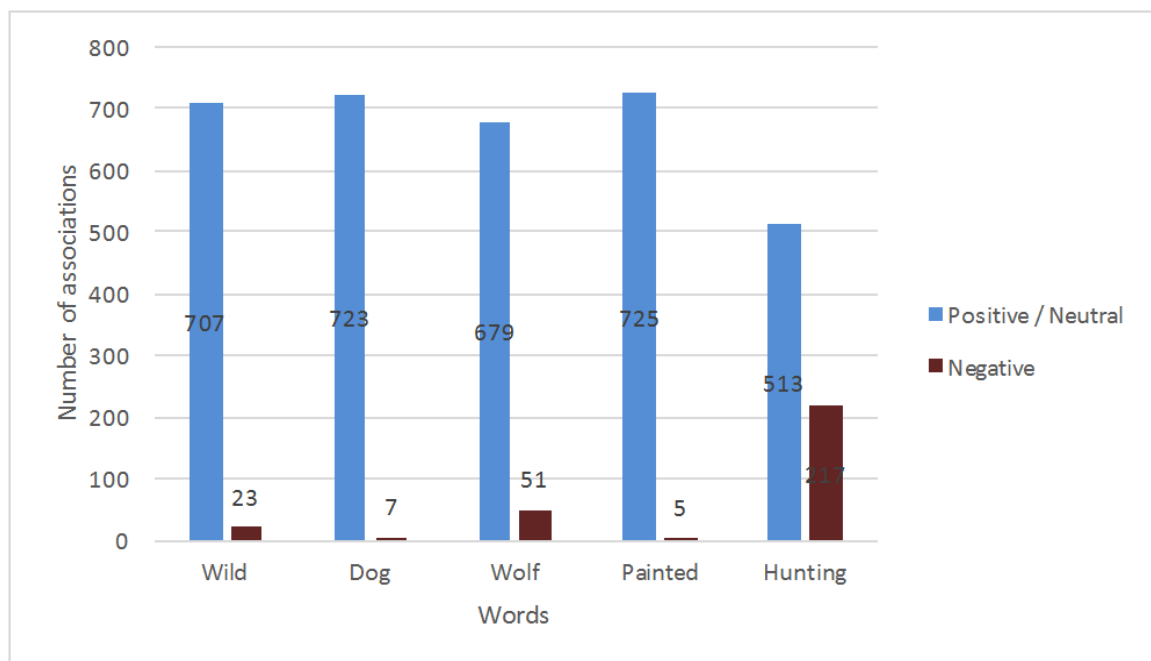
**Figure 7:** Mean donations out of £1000 to *Lycaon pictus* by continent. Error bars are standard error.

### 3.3. Word association survey

730 respondents took part in the word association survey. Word associations for each term were judged to be negative or not (positive/neutral). Figure 8 demonstrates that “Hunting” returned a visibly higher number of negative responses across all participants, followed by “Wolf”, “Wild”, “Dog”, and lastly “Painted”.

Word clouds showing the results of word frequency queries for each stimulus can be seen in Figure 9, where the 30 most frequent associations for each are displayed. Of these, 10 “hunting” associations were negative, alongside 2 for “wolf”, and 1 for “wild”, but all top 30 associations for both “dog” and “painted” were positive. Table 2 sets out a clear summary of positive/neutral against negative responses.

A chi-square test of independence was performed to examine the relationship between the original terms and the negativity of their top 30 most frequent associations. The relationship between these variables was significant,  $\chi^2(4, N = 30) = 30.0, p < 0.001$ , driven by the large disparity between positive and negative responses for all the original terms, apart from “hunting”.



**Figure 8:** Total Positive / Neutral or Negative word associations for each term

**Table 2:** Summary of positive/neutral and negative responses in the top 30 most frequent responses to each term

Word	Positive/Neutral Responses	Negative Responses
Wild	29	1
Dog	30	0
Wolf	28	2
Painted	30	0
Hunting	20	10



## 4. Discussion

### 4.1. Literature review

Analysis of the common names used in the titles of peer-reviewed journal articles revealed a clear preference for the variation “African wild dog”, with only 10% using others. These results reflect the move away from “Cape hunting dog” due to its not being endemic to the Cape region (Sheldon, 1992; Rasmussen, 1999). Instead of this name, the *Journal of the South African Veterinary Association* elected to use “African Hunting Dog”, although this analysis does not show if other articles in this journal did indeed also use “African Wild Dog” during this period. Furthermore, both the trend line and greatly reduced percentage values in Figure 3 suggest that deviation from this term is becoming increasingly less likely, with this preference mirrored when searching in the topic area. The complete absence of the term “Painted Wolf” in this literature implies that it is not accepted as a common name for *Lycaon pictus* in research. It could be that the overwhelming use of “African Wild Dog” is driven by this group due to a focus on biology, rather than the public perception. It would be useful, then, to determine whether the clear preference for the dominant term exists to the same degree outside these circles. Perhaps an analysis of common name use on social media would reveal a different picture and this would be an interesting topic for further study in this area.

### 4.2. Willingness-to-pay survey

The WTP survey showed no significant difference in donation between name variations, so common name for painted dogs does not affect donation size. This was the case both with the dataset as a whole and after dividing it by continent and, interestingly, the least significant result after this division was Australia. Within Australia, the term “wild dog” is used to refer to feral domestic dogs (*Canis lupus familiaris*), dingoes (*Canis lupus dingo*), and dingo-domestic dog hybrids, all controlled as pests (Thompson *et al.*, 2013), with news stories covering aggression towards humans and livestock often referring to them as wild dogs (Burton, 2016; Robinson, 2018; Barker, 2019; BBC News, 2019), so it is unsurprising that Australian visitors to Southern Africa have confused the role of those working with “African wild dogs” with that of feral dog control (Dr. Greg Rasmussen, Painted Dog Research Trust, Pers. Comm.). This perception is reminiscent of the times when they were shot as vermin in Southern Africa (Pringle, 1982) and, as such, name choice within this continent was expected to be pertinent to donation, but the results do not support this.

Donations to *Lycaon pictus*, regardless of common name, varied significantly by continent. Europe chose to donate significantly less than Asia, Australia and Africa, and North America significantly less than Africa. What is surprising about these results is that Africa places third despite painted dogs being native to that continent. More surprising still, is that Australia donated the second largest mean amount despite the potential



confusion with animals they consider to be pests. One could argue that the lower amount donated by North America is driven by their tumultuous relationship with wolves (Musiani & Paquet, 2004) but this is just speculation, especially since these results do not reveal what percentage of respondents from North America viewed the name variation “Painted Wolf”. What is clear, though, is that attitudes towards *Lycan pictus* are more affected by continent than by name variation, which has important consequences for their conservation. Poor, or lack of, reputation is more prevalent in South America, Europe, and North America, and so a strategy that targets these regions would be critical in improving attitudes.

Of course, this survey reveals likelihood to donate in theory only, and WTP surveys have been criticised for this hypothetical nature (Hanna & Dodge, 1995). It is outside the scope of this study to determine whether attitudes towards species can influence real life donation habits. Furthermore, many participants were persuaded to complete this survey as the research “will hopefully improve education and conservation outcomes for the African Wild Dog” (Blades, 2019) although, as described previously, they were not aware of how the survey worked. Due to this, and the fact that the link was also posted (amongst other places) in groups specially dedicated to this species on social media, it is possible that a proportion of those who completed the survey had a pre-existing concern for the species, and so the common name variation was of less consequence. However, analysis of donation size revealed significant differences between continents, which supports the notion that where and how the survey was advertised did not have a meaningful effect on its completion.

Building upon these findings, further studies should consider the motivations behind varying levels of willingness-to-pay towards this species by continent. Understanding the drivers of existing perceptions is critical for effective conservation, and this research should be conducted as a matter of priority. Thoughts that general motivation to donate varies by continent can be discounted in this study as all participants were asked to split the same quantity of hypothetical funds and to distribute it in its entirety between the options. There was no option to not donate, or keep the money for themselves, but this may be an interesting dimension for future investigation.

### 4.3. Word association survey

Conducting a word association survey primarily provides qualitative data on linguistic associations. Yet, by assigning words a negative or positive/neutral value, quantitative data on the degree of negativity can be extracted. The negativity, or lack thereof, of each term was judged by the researcher and so is inherently subjective, however the quantity of ambiguous words was negligible.

What is immediately clear from the results is the number of negative associations with the word “hunting”, at 30% of the total responses, but there was an uncertainty amongst responses over whether the stimulus referred to hunting by human beings or by animals.

In fact, one respondent clarified their answer by saying “Humans-appalling. Animals-surviving”. Although this does not comply with instruction for a single word answer, it underlines the disparity in opinion based on the agent. Some might criticise this lack of clarity in the stimulus, however, this exercise is to ascertain the primary, subconscious reaction to a word, and as such would not function as intended with further explanation of terms.

The next most negative stimulus word was “wolf” and, whilst it appears to be considered as markedly more positive than “hunting”, it is greatly less successful than its noun competitor “dog”, that itself received less than 1% negative responses. Out of “wild” and “painted”, competing as adjectives, the latter returned the least negative responses of all the stimuli whilst the former received the third most. Highlighted by these results, and illustrated in Figure 8, is that one noun and one adjective performed better than their competitors within each category. “Painted” and “dog” both received negative responses in only single figures, which together made up only 4% of the total negative responses. Consequently, it can be reasonably concluded that this combination of words is the common name that is most likely to garner a positive response. This fits with assertions by Dr. Greg Rasmussen (Painted Dog Research Trust, Pers. Comm.) that adopting this name in his work has helped him in achieving positive attitude changes towards the species.

The negativity of the top 30 most frequent responses to each term mirrors almost exactly the performance above. Of these, “hunting” again returned 30% negative responses, “wolf” 7%, and “wild” 3%, which are the same values as when considering all responses (all to the nearest whole number). Even when considering some responses to be more valuable than others (those with higher frequency) results are the same, supporting the notion that the degree of negativity is meaningful and not just the result of chance. The chi-square test of independence conducted on the top 30 most frequent responses to each stimulus further supports this, showing that the negativity values are not just meaningful but also statistically significant. As such, “hunting” is a significantly negative stimulus to respondents, and “painted” “dog” is a significantly positive combination.

Word clouds for the top 30 responses to each stimulus illustrate the qualitative details of the mental association network triggered by each term. The prevalence of “dog” for both “painted” and “hunting” are likely to be caused by the knowledge of survey subject, but looking beyond these paints an intricate picture of subconscious connections. Considering “hunting”, moral judgements such as “wrong”, “bad”, and “cruel” appear alongside associations of violence such as “killing” and “gun”. It seems that use of this term would not negate previous perceptions of the painted dog as a vicious killer and so should be disregarded as an option.

The only negative word that appears in the cloud for “wild” is “dangerous”, which appears also for “wolf”, alongside “scary”. Otherwise, they both paint pictures of the natural world, sharing between them “forest”, “arctic”, “jungle”, “savannah”, and “bushveld”. The top 30 associations for “painted” and “dog” included no negative responses. As the notably most positive stimuli, it is important to examine the connotations

of this combination. The overwhelming interpretation of the term “dog” is as a domestic pet, including many qualities that humans attribute to them, such as “loyal”, “cute”, “family”, and “love”, displaying an existing and clearly positive brand equity for this term, which is also seen to stimulate a positive emotional response — as such constituting an effective brand name according to Robertson (1989) and Berry (2000). Having said this, Macdonald *et al.* (2015) found that IUCN status is key to levels of perceived charisma in animals, and therefore their influence in marketing, and the domestic dog is of the least concern in this respect. Whilst the use of this in the common name for *Lycyaon pictus* would definitely go some way to negating perceptions of viciousness and cruelty, it is critical to underline their endangered status to ensure sufficient understanding of the scale of support that they require, rather than assuming them to be a breed of domestic dog and so under no threat. Indeed, Nick Dyer of the Painted Wolf Foundation, cites this concern as a key reason for favouring “painted wolf” over “painted dog”, and insists that those more likely to engage in conservation would also be less likely to see wolves in a negative light (Nick Dyer, Painted Wolf Foundation, Pers. Comm.). A high priority feature of painted dog conservation should be emphasising their status, alongside generating positive perception.

Finally, results generated by associations to “painted” unsurprisingly reveal a connection to art — “colourful”, “picture”, “colors”, “artist”, “canvas”, “brush”, and “artwork”. The positive in this is that art is often created to be aesthetically pleasing; purposefully crafted to be admired. Indeed, this links to other frequent responses of “beauty”, and “pretty”, judgements on attractiveness that prove a favourable emotional response. As with “dog”, it seems that this term would perform well in a brand name. Separately, the presence of “lady” and “butterfly” implies a familiarity among respondents with elements of the natural world, and so it would be interesting to investigate if responses differ amongst groups who are less engaged by ecology, giving the opportunity to evaluate Nick Dyer’s argument. Similarly, both the word association and willingness-to-pay surveys in this study were only available online so were only accessible to those who had access to, and literacy in, use of computers and the internet. As such, it is demographically biased and future studies should look to increase accessibility, especially in local regions where painted dogs are resident. Furthermore, as with the WTP surveys, attitudes and perceptions are revealed with this method, but drivers behind these perceptions remain hidden. Uncovering these is a key direction for further investigation.

The three elements of this study have uncovered perceptions of, and engagement with, vernacular name variations for the painted dog in both published academic literature, and amongst members of the general public. Use of any other name but “African wild dog” has declined amongst journal articles, but it is likely that their use has not taken into account the desire in conservation to distance this endangered species from enduring negative labels. Whilst the WTP survey uncovered that name choice alone does not influence donation, the word association portion of the study has shown that the choice of words has a significant effect on perception. As conservationists are keen to shed negative connotations, this study shows linguistic choice to be an essential part of this process.

## 5. The bigger picture

Framing the case of the painted dog in terms of marketing allows for a better understanding of why some conservationists have been keen to rebrand the species, and distance it from the more frequently used name African wild dog. The name alone appears not to materially affect the likelihood of donation, but this can be seen both negatively and positively. Unfortunately, changing the common name of the species alone is unlikely to be a one-step miracle fix to increasing public donations. On the other hand, rebranding is also equally unlikely to be detrimental to the likelihood of this investment, and so should not be discounted without a second thought. Linguistic choice does not drive donating behaviours, but it does influence perception, and this is part of a bigger picture. Changing brand name to neutralise negative brand equity is commonplace in the commercial world, so there is no reason why environmental conservation cannot also utilise this tool. Due not only to the former bounties, but also modern attitudes on continents elsewhere in the world, it is likely that the name African wild dog is burdened by negative brand equity. Eliminating this is not the only step, but it could be the first one, to restoring the reputation of *Lycaon pictus*.

It would perhaps be useful to speculate on why an effective vernacular name is not the only step to restoring reputation to such a point that encourages investment, as it may aid understanding of strategy moving forward. As mentioned, WTP surveys have been criticised for their hypothetical nature (Hanna & Dodge, 1995), and this is key. Participants of this study were not asked to donate their own, real money, but instead how they would split a sum of theoretical funds. This was effective in determining if attitudes towards painted dogs varied with vernacular name, but is not able to conclude if, or how much, respondents would donate in real life. What is critical here is understanding that changing attitudes does not necessarily impact behaviour to the same extent, if at all. They are not meaningfully connected (Schultz, 2011; Heberlein, 2012; Macdonald *et al.*, 2015), as in many cases social, economic, and psychological obstacles prevent behaviour change (Veríssimo, 2013), regardless of attitude. Of course, donations are not the only way in which people can engage with conservation, but other methods such as volunteering and ecotourism can also cost time and money. Veríssimo (2013) notes that social marketing is a developing field that will likely reveal effective ways to change behaviour, and combining its outcomes with positive changes in perception will hopefully improve conservation opportunities for the painted dog in the future.

In the meantime, conservationists must contemplate what else can be done. Dr. Greg Rasmussen (Painted Dog Research Trust, Pers. Comm.) argued that the key is simple, the public must be made aware of the reality of painted dogs' lives. Recounting the story of an individual that spent months tending to a wounded brother, returning daily to where he was hidden to feed and care for him, it is a far cry from how they have historically been perceived (Bere, 1956; Fanshawe & Fitzgibbon, 1993; Bothma & Walker, 1999; Creel *et al.*, 2004; Fraser-Celin & Hovorka, 2019). To this end, the Painted Dog Research Trust engages

in education of both adults and children, through the mediums of books for children, school visits, radio shows, news articles, and television documentaries (WildCRU, 2019), a veritable publicity campaign. Macdonald *et al.* (2015) agree that children's literature could be a potential vehicle to improve reputation, and "painted dog" is certainly a name that children can identify some familiarity in, and continue to build positive mental connections around. This does raise the issue, though, of how language is used to discuss nonhuman life. Children's books often anthropomorphise nonhuman characters as children identify more easily with both the characters and the animals this way (Markowsky, 1975; Huxham, 2006). In terms of academia, despite the re-opening of the discourse around this phenomenon in recent decades (Wynne, 2004), opinions remain divided. It has recently been proposed that a more "compassionate" standpoint should be taken by attributing painted dogs with thought and agency, resulting in a deeper understanding of the complexity of their lives, through a process of "responsible anthropomorphism" (Fraser-Celin & Hovorka, 2019, p.1), building on the idea that the perception of a mind is linked to increased value (Gray *et al.*, 2007). Thinking about the historic perception of *Lycaon pictus* as vermin and ruthless killing machines, it can be said that increasing the value attributed to them by human beings would be no bad thing. In terms of their name, removal of the label "wild" could contribute towards an increased perception of control and agency. However, anthropomorphism continues to be criticised for its ambiguity and misinformation (Wynne, 2004; Somerville *et al.*, in review). A multidisciplinary collaboration into the effect of how animals, and specifically the painted dog, are framed, not just on the public's behaviour towards them, but also their accurate biological understanding, could provide a clearer understanding of the way in which they should be conveyed in potential educational resources, such as books and television documentaries.

Most recently, the extensive use of anthropomorphism to enhance narrative in *Dynasties* has been heavily criticised as harmful to conservation (Somerville *et al.*, in review), bringing this study full circle. The BBC were keen to push the truthfulness and positive impacts of the common name "Painted Wolf" (BBC, 2019b; BBC Earth, 2019), but their argument of translation accuracy is flawed, and that of positive impact unsupported. The desire to use "a more 'wild' name" (BBC Earth, 2019) is incongruous with moving away from "African wild dog" that contains that exact term. Wanting to improve perception of painted dogs is a commendable objective, but it seems that "Painted Wolf" has been chosen entirely speculatively in this case, perhaps under the presumption that this was more likely to increase viewing numbers. Assertions that painted dogs are more closely related to wolves (*Canis lupus*) than domestic dogs (*Canis lupus familiaris*) (BBC Earth, 2019) are meaningless given its phylogenetic independence from both, supported by the lack of uptake of "Painted Wolf" in published scientific literature. Meaningful, however, is the differing perceptions of each found by this study. Choosing to use the term "wolf" does not distance the animal from the impression of its being a "scary" and "dangerous" killer that has blighted its reputation for centuries. True wolves have long since suffered extensive persecution (Fritts *et al.*, 2003; Musiani & Paquet, 2004), and so electing to use this linguistic

cue likely implicates the *Lycaon pictus* in this enduring negative brand equity. On the other hand, “dog” inspires positive emotional reactions of “love” and “loyalty”, and so is the vastly better choice if the BBC’s objective is, as they say, to “promote positive attention” (BBC Earth, 2019). One could speculate that the suitability of a name choice is affected by the intended audience and the goal; perhaps “dog” is more likely to motivate donation amongst a population that has demonstrated almost entirely positive feelings towards dogs, whereas “wolf” could be more likely to increase viewership of a wildlife documentary. Thus, it is not necessarily that their choice is flawed, but rather their arguments behind it. Nick Dyer (Painted Wolf Foundation, Pers. Comm.) points out that since adopting “painted wolf” for their organisation, levels of engagement on social media channels have been high, and whilst this may well be stimulated in part by the release of *Dynasties*, it still provides a far-reaching opportunity to improve education. Condemning the divisive nature of the argument around common name, he reasons that cohesion between groups, and the respective names that they choose to use, is more important. So, whilst this study has used an evidence-based approach to demonstrate that “painted dog” is the most positive choice of vernacular name and, as such, that the BBC’s arguments are flawed, it would be worth considering whether or not conflict between conservationists around this topic is at least as damaging as the issue itself.

## 6. Conclusion

Having historically suffered at the hands of humans, it is clear to see why the BBC were keen to distance painted dogs from connotations with feral wild dogs, and although it has been seen that rebranding this species is not likely to have a direct effect on donating behaviours, it does have a positive effect on perception. This improvement features as part of a wider process of education. Evidence shows that the BBC were, indeed, correct that “African wild dog” elicits a not entirely positive response, but in this respect failed to choose a better alternative in using “wolf”. Enduring connotations of persecution and danger connected to this term are not effective in neutralising negative brand equity, so it seems that despite their seemingly honourable intentions, their argument does not quite match up. There is, in fact, a superior choice. The use of the name painted dog triggers vastly improved linguistic associations, and as such positive brand equity and a solid basis for further education, which is the reason it was chosen for this study. What is absolutely critical, though, is that in order to be successful, conservation must be collaborative. Parties invested in painted dog conservation must either all adopt this term, or at least cease criticism between themselves in order for it to be successful or else run the risk of further confusion and split resources. Rebranding would not necessarily be without its challenges, but it is likely that if carried out successfully, it could begin to improve conservation outcomes for this endangered species. Beyond this, future studies should focus on understanding the drivers behind the attitudes that have been uncovered in this study in order to improve targeted education and conservation.

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